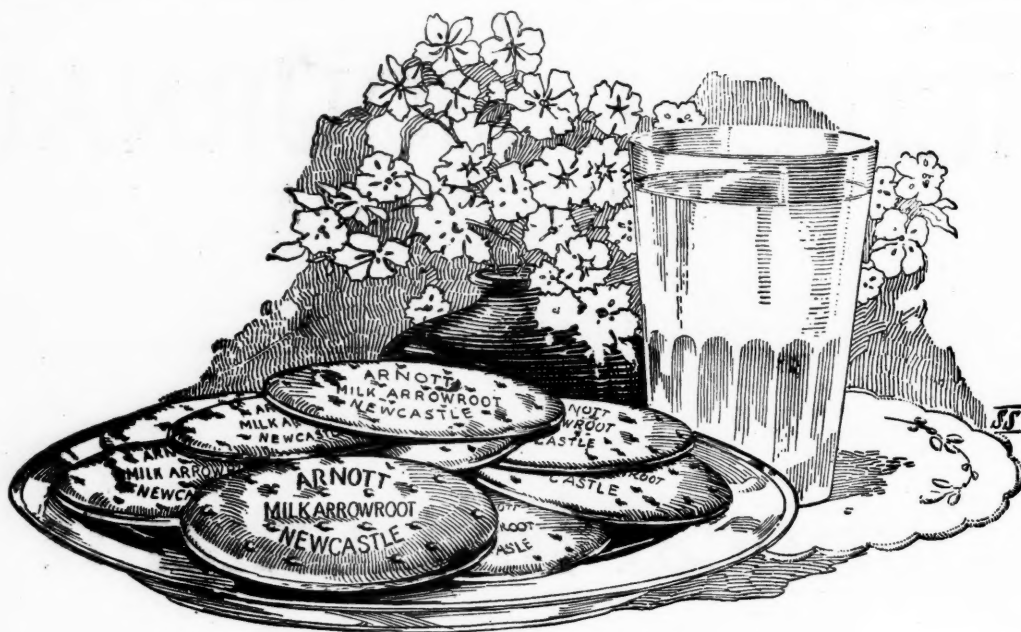


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### NOTE ON A FORM OF PELVIC HYDATID CYST AND ITS TREATMENT.<sup>1</sup>

BY FRED. D. BIRD, C.B., M.S., M.B., F.R.C.S. (HONORARY),  
Melbourne.

THE seeing recently of two old patients brought to my mind the Latin copy-book tag: "If we always follow Nature as our guide, we shall never go far astray." Some twenty years ago a gentleman consulted me because he had passed *per urethram* a small live hydatid cyst, the specimen being shown to me; the only doubt about it was its place of origin. The kidney was first accused of harbouring the unbidden guest, but ordinary examination failed to find anything suggestive. Rectal examination, on the contrary, gave cognizance of a rounded swelling about the size of a flattened golf-ball, situated between the base of the bladder and the rectal wall, a moderate amount of tissue existing between the rectum and the adventitia. The impression given was that the swelling belonged rather to the bladder than to the bowel, there being no invitation to attack the cyst through the bowel wall. The perineum also gave no hint as to its being the proper route to the echinococcus. So I chose a suprapubic cystotomy, after which I found the small

opening in the floor of the prostatic urethra, whence the extruded cyst had come and was able to enlarge it with my finger, which passed then into a thick-walled sac, containing many daughter cysts of small size. The mother cyst was not demonstrated. The cavity was emptied with the help of an ovum forceps and a drainage tube having been placed through the opening in the prostate made by the finger, very gentle irrigation was performed. The after-treatment consisted in relieving pain, which was considerable, and in cleansing thoroughly the tube several times in the twenty-four hours. Its replacement was painful, but no urinary deposits, which I feared, occurred. Boro-citrate of magnesia was given freely in large quantities of water. The date of the removal of the tube gave me much mental exercise. A decision was helped by rectal examinations and the tube was dispensed with at the end of a week. The suprapubic wound, which was small, being made to suffice for the entrance of my forefinger and not for visual inspection, was allowed to heal and the patient left my hospital after a few weeks, during which he was quite well. I never saw him again. He, however, has remained a guide or rather the extrusion through his prostate of an echinococcus cyst did and when a patient with a similar condition visited me, I was ready to try the same route to the home of the parasite. This second patient, on whose account I was

<sup>1</sup> Read at a meeting of the Victorian Branch of the British Medical Association on August 2, 1922.

associated with Dr. Bage, came into my hospital seventeen years ago for the treatment of a cyst situated as I have described. The patient had pain vaguely situated at the base of the bladder, with some disturbance of the ease of micturition; and he had passed a small cyst. The finger examining the rectum found a swelling similar to that in the first patient. A similar operation was done and a similar good result followed. This patient had a hydatid history. Before this I had operated twice for liver cysts in the epigastric region and during my absence in Europe a colleague operated for cysts in the liver placed laterally. This patient, aged fifty-seven, is now very well, apparently free from hydatid disease and with no urinary disease of any kind.

Much to my interest a third patient came to me and I can give his subsequent history. His symptoms and signs were like that of the other two, except he had no expulsion of a daughter cyst. The same operation was performed, aided by a small stab wound in the bulged floor of the prostatic urethra with a tenotomy knife; he remained well for thirteen years. Recently he has had some urinary and seminal disability sufficient to make me re-open his bladder some five months ago. A very small pedunculated growth was removed from the internal urinary meatus, but this had had no effect upon the symptoms. Since this the left seminal vesicle has enlarged in a manner more suggestive of chronic vesiculitis than of tuberculosis or hydatid disease. With the approval of Sir Henry Maudsley I have recently removed an omental hydatid of considerable size and investigated a large retro-peritoneal cyst, which is best attacked through a posterior incision. During this operation I searched in vain for a cyst in the recto-vesical pouch and demesnes adjacent thereto.

The sum of these cases is little to base pathological guidance upon, but I venture to suggest that it shows that cysts placed in this position are slow growing and are old before discovery, the mother cyst having disappeared. They tend to grow towards the prostatic urethra rather than towards the bowel or the perineum. Apart from any selective tendency which hydatids sometimes exhibit in their growth, pressure of surrounding organs is probably the main factor of their development in a given direction. Fullness of the bladder would cause little pressure towards the rectum of a cyst between the two organs, whereas we know that fullness of the rectum causes undoubted pressure on the prostate. There is no tendency to rectal obstruction, as there may be with intra-abdominal recto-vesical space hydatids; I have seen hydatids in the perineum, but they presented an utterly different clinical picture.

Again dealing with but very small figures, I believe that we may say that cysts or portions of membrane passed *per urethram* are more likely to come from the kidney, but there is a good chance of their coming from the areolar space between the prostate and the rectum through the prostate itself. Curiously enough, the ureter is in far more danger of damage from intra-peritoneal cysts than from those growing in the areolar space with itself.

Sir Harry Allen's Museum contains but one specimen of hydatid cyst in the position we are discussing and in it there has been no attempt at dispersion of cysts. I have no hesitation in recommending the route I adopted in these cases as the best way by which the disease can be attacked.

#### **PATHOLOGICAL DENTITION: A CLINICAL ENTITY.<sup>1</sup>**

BY VAL. MACDONALD, L.R.C.P., L.R.C.S. (Ed.),  
D.D.S. (UNIV. OF PENN.),  
Melbourne.

PATHOLOGICAL dentition is the subject I have chosen for my paper to-night and, though medical men generally are inclined to deny its existence, it will be my endeavour to prove to you that it has definite claims for recognition as a clinical entity.

By the term "dentition" I do not wish to include the development of the teeth germs, but to refer simply to the natural processes by which the teeth are liberated from their osseous and fibrous coverings and made subservient to speech and mastication. I shall not confine my remarks to the teeth of the first denture, but from birth until the complete eruption of the third molars of the permanent denture.

Consideration of the eruption of the teeth of the first dentition leads us back at once in thought to very ancient days when every ailment of the infant was attributed to "teething" and the helpless little mortal was in consequence the victim of all kinds of heroic treatment from scarification of the gums with a septic finger nail to blistering and venesection and to rubbing of the gums with such concoctions as the brains of a goat, the fresh blood of a cock's comb or the juice of a lettuce.

But if in those ancient days the belief in the evils of dentition ran riot, surely the pendulum has swung now to an extreme of equally dangerous disbelief.

Dentistry has progressed in recent years and that as the result of its applied and systematized knowledge in laboratory and in clinic. It is in the light of a fuller scientific knowledge that I ask the medical profession to reconsider its attitude towards this important subject. How often, both in the medical and dental world, have we witnessed the advent of some new drug or operative procedure ushered in full of promise, then rushed to death, abused and cast into the limbo of forgotten things until some treasure-hunter re-discovers it and lifts it to its proper place. I need only refer you to the early use and abuse of X-rays to illustrate my meaning and to remind you how greatly it has come into its own again in the last few years as a valuable therapeutic agent. Are we not too apt to allow the hope that a new agent may be a panacea for all the ills to which flesh was ever heir, to upset what should be the better balanced judgement of a scientifically trained mind?

I do not think I need weary such an audience with any recital of the usual signs and symptoms

<sup>1</sup> Read at a meeting of the Victorian Branch of the British Medical Association on August 2, 1922.



attributed to dentitional disorders in infancy or yet again of the various theories of eruption. Suffice to say that any theory must take into consideration the action of the ductless glands, such as the pituitary and thyreoid. All our evidence points to a direct relationship between the growth of bone and the eruption and growth of teeth.

At this stage I would like to exhibit a few slides kindly sent to me by Dr. Hopewell Smith<sup>(1)</sup> to show the stages of eruption and of the relation of the teeth of the first to those of the second dentition.<sup>1</sup>

These slides will, I think, briefly convey to you not only the impression of great physiological activity, but also of very great pathological possibilities. By two and a half to three years the first dentition is fully erupted, though calcification is not complete for some months.

Now you will at least admit the first dentition to be "a physiological and anatomical crisis of infancy." But, more than that, I ask you to realize that in the infant we are not dealing with a miniature adult, but rather with an exquisitely delicate conglomeration of developing cells in various stages of completion and specialization and in finely adjusted balance, so that a storm centred in any portion of that infant organism will upset that balance as surely as night will follow day.

#### Anatomical Considerations.

In any study of dentition we must also fully realize the importance of the trigeminal nerve. In his "Practical Anatomy" (Volume III.),<sup>(2)</sup> Professor Berry refers to the trigeminal nerve thus: "The great sensory nerve of the head and face consists of two distinct parts, a large sensory *portio major*, and a small motor *portio minor*, and presents more extensive central connexions than any other cerebral nerve, extending, as they do, from the cranial part of the mesencephalon to the level of the second cervical segment." Then I must remind you of its numerous important branches, both sensory and motor, and of its linking up with the great sympathetic nervous system through the carotid plexus and in the sphenopalatine, otic, ophthalmic and submaxillary ganglia. Nor must we forget the various anastomoses with other cranial nerves. And, after all, in the absence of any direct anastomosis the delicate sympathetic fibres link up nearly all these important cerebral nerves.

#### The Cause of Pain in Dentition.

Now, I cannot better picture the present medical attitude, as it appears to the dental world, on the subject of dentition than by quoting from a full discussion on the subject at an annual meeting of the British Medical Association in England, as reported in *The British Medical Journal*. The chief papers were read by Dr. Leonard Guthrie<sup>(3)</sup> and Dr. H. A. T. Fairbank<sup>(4)</sup> under the title of "Teething and its Alleged Troubles." Dr. Guthrie gave a very interesting historical sketch of the question from the time of Hippocrates. Dr. Guthrie takes exception to lancing on one oft-quoted ground, that if the

tooth failed to appear, it had thereafter to penetrate even harder cicatricial tissue. And in quoting Hurler (1742) as stating that cicatricial tissue was easily penetrated by the erupting tooth, Dr. Guthrie states: "The latter argument disposed of the whole theory that painful dentition is due to resistance on the part of the gums and that it upset the basis of belief that the operation 'liberated' imprisoned teeth." Again Guthrie states: "It is, I think, only when teeth are nearing the surface of the gums that they may create disturbance and then only when the gums are inflamed." He very rightly lays stress on local causes of gingivitis generalized or at the site of an erupting tooth and of the necessity for insuring oral cleanliness.

Dr. Guthrie is puzzled to explain why dentition is easy and painless in some and attended by severe local and alleged constitutional disturbances in others and why a child may cut one tooth with ease and the next with difficulty. He discounts the association of any constitutional disturbance as being due to reflex irritation from dentition. He advocates local applications to the gum and adds: "If tender and painful the gum should be scarified under antiseptic precautions."

Now for one or two extracts from Dr. Fairbank's paper before I criticize the discussion. He says: "Is it at all surprising that the delicate gum covering the rising tooth should get bruised by the child's efforts to swallow a door-handle and the pain produced make him fretful? More than this I do not think we can attribute to the erupting tooth." Again he states: "Earache indicated by a child constantly rubbing his ears and crying is never, I believe, due to pain being referred from the teeth, but is the result of deficient aeration of the tympanum secondary to the presence of adenoids in the nasopharynx." Finally, Dr. Fairbank states that the only two conditions to justify lancing or removal of portions of gum are (i.) definite inflammation localized to or spreading from the ruptured gum over a prominent tooth and (ii.) the presence of a traumatic dentigerous cyst of some size.

Now it is evident that Dr. Fairbank considers trauma of gum by some external agency to be the only possible dentitional worry for the infant. Again, in deliberately denying the possibility of earache being at times a referred pain from a tooth, he seeks for what is probably a far less frequent cause in the negative air pressure he mentions. Perhaps he would also deny the possibility that earache may have its origin in gastric disorders, but the vagus is responsible for that recognized possibility through its *ramus auricularis* and the pain is of course a referred pain only.

Now as to Dr. Guthrie's points.

Cicatricial tissue is surely more poorly organized than normal tissue and more easily broken down. And his contention that passage through cicatricial tissue upsets the basis for the belief that lancing freed the tooth and his further contention that it is only when the gums are inflamed that any trouble is caused, is the direct result of the view so generally adopted of looking for trouble at the wrong end of the tooth.

The extracts quoted from Dr. Fairbank's paper

<sup>1</sup> Dr. Macdonald exhibited slides illustrating deciduous teeth of a child, the skull of a child at birth and at later periods up to the age of six years, when the permanent molar teeth are in position and the deciduous incisors are being shed.

strengthen that assertion. So, too, does the opinion expressed by Dr. Forchheimer, of the United States of America, in his work, "Diseases of the Mouth in Children," wherein he says: "I always teach my students that teething produces teeth and nothing more." A Daniel come to judgement!

Let me show you three slides.<sup>1</sup>

Now while I agree absolutely with Dr. Guthrie in his remarks concerning oral sepsis, I recognize inflammation of the gum as but a minor, though at times an exceedingly painful, condition in dentitional disorders and as one frequently due to trauma and sepsis. But surely a pathogenic condition can exist without bacterial invasion and here we have one in which the results of restoration to normality are as striking, not to say as dramatic, as any which may follow the elimination of septic oral conditions.

Though dentition is normally a physiological process, it is seldom that an infant passes through that period of dentitional stress between the age of, say, five months to two and a half years without at some time showing manifest signs of nervous irritability more or less pronounced. The process of eruption is a very delicately balanced mechanism in the still more delicately balanced organism of the developing infant. Dr. E. C. Kirk<sup>(6) (7)</sup> describes the process beautifully as "a sort of moving equilibrium dependent for its stability upon the nutritional and physiological balance of the entire infant organism."

Now, anything upsetting this delicate physiological balance will bring about inharmony between the root growth and the absorption of the tissues overlying the tooth crown; the result is a steady "backward pressure of the calcified portion of the tooth root upon the dentinal papilla with any or all of the succeeding phenomena of pathological dentition as the result."

As Dr. J. W. White has expressed it in a little classic entitled "Diseases Incident to the First Dentition,"<sup>(8)</sup> "the tooth then becomes a mechanical irritant."

The gum in many of the worst cases of backward pressure may show no signs of irritation. Gastro-intestinal upsets are a factor in nutritional upsets and are themselves often due to a condition of oral sepsis, but there is no doubt they may be directly due to pain, just as a reflex vomiting may be caused by a foreign body in the external auditory canal. In such conditions as early rickets we must remember the influence of malnutrition in upsetting the dentitional balance and so each may at one and the same time be a contributing cause of a convulsion.

#### Erythrœdema a Disorder of Dentition.

In February, 1921, Dr. Jeffreys Wood published in THE MEDICAL JOURNAL OF AUSTRALIA an interesting article on erythrœdema.<sup>(9)</sup> From that article I quote the following extracts:

"The majority of my patients have been between eight and eighteen months."

"The child is carried into the surgery with its

head bent down generally into its mother's chest or frowning with half-closed eyes as though it dreaded the light and refusing to look up. Usually it is whining and fretful."

"Some patients do not seem able to rest, scratching at their feet or pulling their hair or ears."

"They are worn out for want of sleep."

"The earliest symptom in the case of young infants seems to be continual fretfulness and inability to sleep at night and disinclination for breast or bottle. This may go on for a week or two, when . . . a profuse, extremely irritable sweat rash appears."

"Stomatitis is a frequent symptom."

Now, up to the date of publication of that article close bacteriological research failed to disclose any particular causative agent and all treatment seemed disappointing in results, especially efforts to produce sleep.

I ventured in a letter to Dr. Wood to attribute the early symptoms to dentitional trouble due to backward pressure on the dentinal pulp. If any here to-night have had the misfortune to have had an exposed pulp pressed upon steadily with a soft pledget of wool, they will have a clearer understanding and fuller sympathy for these infants enduring that same pain for days without end and they will not wonder at the profuse sweating induced by such pain and the rash, too, will be more understandable.

Dr. John Thomson, in the 1921 edition of his work, "The Clinical Study and Treatment of Sick Children,"<sup>(10)</sup> has an excellent article on dentition. He calls attention to the severe functional neuroses that may be set up. He mentions intense photophobia as one of many symptoms and acknowledges the possibility of recurring convulsions.

I think the suggestion of lancing in these cases of erythrœdema is a simple expedient which might be tried early; at least it would do no harm. But it must be thorough. Scarification is useless.

I have personally had several most gratifying results in thorough lancing of the teeth next in order of eruption in cases I deemed to be due to dentitional upset. One recent case was that in which the mother informed me that she was worn out, not having had a good night's rest for three weeks because of the fretful, restless condition of her infant, aged eighteen months. I lanced over two teeth that day and next morning had word of "the first decent night's rest for three weeks."

#### Disturbance of the Second Dentition.

I want here to touch briefly upon some of the worries of the second dentition.

The chief abnormal nervous phenomena relating to the second dentition are perhaps due to impacted or misplaced teeth, but even when teeth of this dentition are endeavouring to erupt in correct alignment, they may be subjected to a backward pressure with serious results. I have found the second and third molars the most likely sources of trouble in this respect. This is due, I think, to the fact that they erupt between the years of twelve and eighteen years, a time of great physiological activity, when the youthful subject is an easy victim to functional

<sup>1</sup> Dr. Macdonald showed three slides taken from Broome's book.<sup>(5)</sup> The first was a reflected picture of the deciduous teeth at birth, to show the progress of calcification. The second was the mandible of a child one week old. In it the relation of developing teeth to the mandibular canal and the firm attachment of the follicular walls to the oral membrane were emphasized. The third slide showed the relation of the calcified caps to pulps.

neuroses. I show two slides to illustrate the still incomplete stage of calcification of the roots of the second or twelve-year molar. They will demonstrate the possibility of backward pressure owing to the very open apex.<sup>1</sup>

The eruption of the third molar more nearly approaches a physiological process in those people whose teeth are subjected to the fullest functional activity and their time of eruption is not only earlier, but their development more perfect. Such conditions are to be found in the Mexican Indians, some African tribes and the Maoris. In more civilized peoples the third molars seem to be disappearing. Many people never erupt this tooth and may pass through life without any apparent trouble from it. It is a curious fact that, despite this tendency of the third molar to disappear, it shows in the mandible at least no tendency to diminish in size, but rather a tendency to increase, if it varies at all. The maxillary third molars are often small teeth.

An impacted tooth may give rise to a variety of troubles. As early as fourteen years of age a third molar may give rise to choreic twitchings of facial or neck muscles and the skiagram will generally confirm this early warning of impaction. I am of opinion that an impacted tooth or teeth may be a cause of nerve stress without any actual manifestation of pain. Dr. E. C. Kirk, one of the leading authorities in the dental world to-day, whom I personally know to be a very keen clinical observer, has recently reported two cases of great interest. Both patients happened to be young graduates of well-known American engineering schools. Both had suddenly become demented and were confined in asylums on account of alleged *dementia præcox*. One was found to have six irregularly placed impacted teeth, while the second patient had four third molars badly impacted. This is Dr. Kirk's comment after Dr. Cryer had successfully removed all the impacted teeth. "*Dementia præcox* is generally regarded as incurable. I have not yet decided in my own mind whether these two cases refute that conclusion or whether they merely represent an error in diagnosis by four noted alienists. Be that as it may, they at least demonstrate the fact that two cases committed to asylums as incurably insane are now restored to normally useful lives as the result of removing primary sources of dental peripheral nerve irritation."

The remaining few slides I now wish to show you will demonstrate various conditions to which impacted teeth may give rise. The first is a picture of the teeth of a person who had persistent headache chiefly referred to the right frontal and parietal region. All three upper molars are in position, but a supernumerary third molar is seen impacted and is causing pressure on the pericementum of the third molar. Removal of this tooth gave complete relief. The second is the skiagram of the mouth of a patient with neuralgia of the left side of the head and face, chiefly in the temporal and frontal region. As the left upper canine was missing, the patient was sent for X-ray examination. The canine is seen lying

diagonally with its nose cutting into the right central canine tooth. The tooth has already cut its way through the left central. The left central was removed as useless and the canine brought into its place by special appliance. There was no further pain. The third slide is a skiagram of an impacted third upper right molar, which is, I believe, chiefly concerned in pain referred to the right temporal and occipito-cervical regions. The fourth is from another obscure neuralgic case due to the absorption of the palatine root of the first upper left molar by pressure effect of a misplaced, unerupted second bicuspid. In the fifth a topsy-turvy bicuspid unerupted and responsible for neuralgia of the right side of the face and head is seen. The sixth picture is of a badly impacted third lower right molar, causing pressure on the root of the second molar and also back pressure on the mandibular canal. Removal as usual gave relief from pain.

The other slides depict various conditions, including impaction of deciduous or permanent molars, causing neuralgia, inflammatory lesions and the like.

#### Conclusions.

In conclusion, I do not wish you to understand me to attribute too much to dentitional disturbance or that I fail to recognize the coincident as distinguished from the disease incident to dentition. I believe dentition to be normally a physiological process, but it may become pathological. Promote as far as possible normal eruption by attention to diet, hygiene, clothing, etc.

Dr. John Thomson says: "We should not be ashamed of diagnosing teething as the cause of certain morbid phenomena in infants. This diagnosis, however, should never be made until all other causes of the symptoms have been carefully excluded and we should not be satisfied with it until the child is well."

I am very grateful to have had this opportunity of putting the case for dentition before this audience and if I have not altogether convinced you that pathological dentition has a clinical entity, I trust that I have helped to convince you that dentition may at least be a very important factor in the causation of disease.

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- (<sup>1</sup>) Hopewell Smith: "Dental Anatomy and Physiology," 1913.
- (<sup>2</sup>) R. J. A. Berry: "Practical Anatomy," 1921, Volume III, page 491.
- (<sup>3</sup>) Leonard Guthrie: *The British Medical Journal*, August 22, 1908, page 468.
- (<sup>4</sup>) H. A. T. Fairbank: *The British Medical Journal*, August 22, 1908, page 471.
- (<sup>5</sup>) Norman Broomel: "Anatomy and Histology of the Mouth and Teeth."
- (<sup>6</sup>) E. C. Kirk: "The Nervous Reflexes of Dentition," *Dental Cosmos*, December, 1920, page 1,373.
- (<sup>7</sup>) E. C. Kirk: "Reflex Disturbances in Relation to Dentition," *Dental Summary*, August, 1916.
- (<sup>8</sup>) A. Jeffreys Wood: *THE MEDICAL JOURNAL OF AUSTRALIA*, February 19, 1921, page 145.
- (<sup>9</sup>) J. W. White: "Diseases Incident to the First Dentition."
- (<sup>10</sup>) John Thomson: "The Clinical Study and Treatment of Sick Children," 1921 Edition.

<sup>1</sup> Dr. Macdonald exhibited a slide taken from Broomel's book to depict the stages of calcification from seven years to completion. He also showed a slide of the same stages seen in vertical section of the tooth.



# THE ENERGY CONSUMPTION OF AUSTRALIAN STUDENTS.

By H. S. HALCRO WARDLAW, D.Sc.,

Lecturer and Demonstrator in Physiology, University of Sydney; Biochemist, Sydney Hospital.

## NATURE OF INVESTIGATION.

In a former paper I recorded a series of analyses of the daily food of a number of Australian subjects.<sup>(5)</sup> The subjects examined were engaged in university work, either as teachers or as students. The results of the work mentioned showed that the average energy content of the daily food of these subjects was 2,110 calories for the men and 1,977 calories<sup>1</sup> for the women during the period of examination.

If these subjects be classed as persons doing light work, their degree of physical activity is not likely to be under estimated. The figures for their energy consumption, however, are distinctly lower than the 2,400 to 2,800 calories usually given for men subjects of a similar degree of activity in Europe or America.

In view of this apparently lower energy consumption of the Australian subjects and of the small number of Australian subjects who have been examined, I have continued my previous work and have examined another series of subjects of the same occupation, during the same season of the year and by the same methods.

The average figures for energy of the diets in the two series of experiments agree to about 5%. The two series have, therefore, been considered together in the present paper, as it is believed that the information to be obtained from one larger series of observations is of much greater value than that to be obtained from two smaller series.

The average energy content of the day's food of the ten men subjects examined has been found to be 2,170 calories and of nine women subjects 1,925 calories.

Food, however, is not taken into the body merely as a source of energy. It supplies also the building material necessary for growth and repair. It must, in addition, contain traces of those peculiar substances, the vitamins, without which the normal utilization of the matter and energy of the food is impossible.

The principal fuels of the human body are the carbo-hydrates and the fats. These substances can act only as fuel. The building materials of the body are the proteins and the inorganic salts. The proteins can act also as fuel.

It is not a matter of indifference how the energy of a diet is distributed among its constituents. Modern physiological investigation points to advantages in restricting protein mainly to its use as a building material, for which it can be replaced by nothing else. As a fuel it is physiologically and economically wasteful.

The simple fuels, carbo-hydrate and fat, are to a large extent interchangeable. Even in this case, however, there are limits in the replacement of the one by the other which cannot be overstepped with safety.

<sup>1</sup> The large or kilo-calorie is used in this paper.

The composition of a diet is therefore of an importance almost as great as its total energy value.

The work described in this paper includes determinations of the percentages of fat, protein, carbohydrate and ash in the usual daily food of the subjects. The total quantities of the various food-stuffs consumed per day have been calculated and also the percentage distribution of the total energy among the various food-stuffs.

The ages of the subjects were noted to the nearest year. Their heights and weights were observed and the areas of their body surface were determined from a graph. The energy consumptions of the subjects per day have been calculated for each kilogram of body weight and for each square metre of body surface.

The average total energy in the food of the subjects per day has been compared with the basal metabolism given in the tables of Harris and Benedict<sup>(4)</sup> for American subjects of the same heights, weights and ages as the averages of the present series.

The details with regard to the subjects and the methods of examination of the food are as follows:

## Subjects.

The occupation of the subjects, although it involves a good deal of mental work, can hardly be regarded as sedentary. Most of the sedentary and mental work of these subjects was done during the evenings. During the greater part of the day-time they were actively moving about in hospitals or laboratories.

With the exception of one of them (No. 8), who was a swimmer, none of these subjects was engaged systematically in athletic exercise. Their degree of activity will not be exaggerated, however, if they are classed as persons taking light physical exercise.

All of the subjects were in good health at the time of the experiments.

The heights of the subjects without boots were determined to the nearest half centimetre. The weights were determined to the nearest tenth kilogram. The weights given are the weights of the subjects fully clothed. The average weights have been corrected for the weight of clothing by deducting four kilograms for the men and two and a half kilograms for the women. The surface areas of the subjects were obtained by reference to the height-weight chart of Du Bois,<sup>(3)</sup> in which the relation between height, weight and area of body surface has been plotted from the formula

$$A = W^{0.425} \times H^{0.725} \times 71.84,$$

where H is height in centimetres, W is weight in kilograms and A is area of body surface in square metres.

## Season of Experiments.

The experiments were carried out during the months of September, October and November, that is, during the spring. The approximate average daily temperatures during these months were (in Sydney) 15.7° C., 19.4° C. and 22.6° C. respectively for 1920. The corresponding temperatures for the same months in 1921 were 17.9° C., 17.9° C. and 22.0° C. respectively. The corresponding humidities, expressed as percentage saturations, were 70%, 67% and 58% for the



three months in 1920 and 62%, 60% and 68% for the same three months in 1921.<sup>1</sup>

The food consumptions observed were, therefore, those for temperatures intermediate between the hottest and the coldest periods of the year.

#### Food Samples.

In making a chemical examination of the normal diet of a subject, the fact must be borne in mind that it is impossible to analyse the food which the subject actually eats. The attempt is made therefore to obtain specimens of food-stuffs resembling the portions eaten as closely as possible. These specimens are then submitted to analysis. Exact matching of the specimens analysed with those eaten is only possible with food-stuffs of uniform composition or in a finely divided state. Such foods were used in the classical experiments carried out by Atwater and Benedict<sup>(2)</sup> to determine the heat of combustion of food-stuffs when burned in the body. A diet composed of food of this kind, however, is not a normal diet. In the examination of a normal diet one is forced to choose for analysis portions of the food-stuffs which would be eaten. In other words, the specimens for analysis must be chosen in the same way as the specimens for consumption.

In the present experiments double quantities of the various constituents of the diet were prepared for the subject during the period of the examination. The food was then divided into two equal portions. One of these portions was eaten by the subject. The other portion was prepared for analysis by removing from it the parts which the subject would not have eaten, such, for example, as the bones and connective tissue of meat, the skins of fruit, etc.. This was done by the subject himself.

Each sample thus represents the net amount of prepared food which would have been eaten by the subject in a day, and gives no information as to the gross amount of raw material from which the prepared food was derived.

Similarly each sample represents the gross amount of food which would have been taken into the body, and gives no information as to the net amount of food metabolized in the body.

The whole of the sample obtained in this way was prepared for analysis. Any errors which might arise in attempting to obtain an aliquot part of the sample at this stage of the procedure, were thus avoided. The samples for analysis were not compared by weighing with the food eaten, as the food which a person eats is not normally weighed out to him. Even if an accurate comparison of the weights of the different constituents of the diet in their cooked state were feasible, the results would be misleading owing to the natural variability of the food.

In the first experiments the samples collected for analysis consisted of duplicate portions of everything consumed with the exception of the water contained in beverages (not including milk). In later experiments milk, sugar and butter were collected and examined separately. These are food-stuffs which are of uniform composition in a given sample and are readily measurable. The withdrawal of the

milk and butter from the sample has the advantage of facilitating the treatment prior to analysis.

The samples of diets obtained as described represented the diets of the subjects for periods of twenty-four hours. In the case of the majority of the subjects a single day's food was examined. In the case of subject No. 6 samples were obtained on three days. In the cases of subjects No. 8 and No. 9 samples were obtained on two days. Where more than one series of analyses have been made for one subject, the means of the individual analyses are given.

#### Weight of Food.

On obtaining the sample the first procedure was to determine the dry weight. The sample was then minced as finely as possible. A small loss is difficult to avoid during this process, as the last traces of food are difficult to remove completely from the mincing machine. The amount of the loss was determined by re-weighing and the necessary correction applied to the final results. It was assumed in the correction that the loss was evenly distributed over the various constituents of the food. Any loss of weight due to the evaporation of water during the process of mincing was neglected.

The minced sample of food was next dried to constant weight at about 100° C., the sample being broken up from time to time to hasten the drying. A certain amount of browning of the food takes place during the drying.

The dried food was then ground as finely as possible in a mill. A loss occurs in this process, as in the mincing, and was determined by weighing before and after the grinding, the necessary correction being applied to the final figures. Owing to the greasy nature of the material the process of grinding was rather tedious, as the finer particles tended to adhere to the roller of the mill. The final product would all pass readily through a sieve of about one millimetre mesh.

The dried, powdered food was then thoroughly mixed in the way used for mixing a bulk sample of powdered ore. The total weight of powdered food obtained ranged from about three hundred to about five hundred grammes. From it a sample of about one hundred grammes was taken by the process of quartering used in the sampling of powdered ore. From this final sample the specimens for analysis were taken.

#### Methods of Analysis.

##### Fat.

The percentage of fat in the samples was determined by the method of Röse-Gottlieb. A suspension of the ground food in water was made for the estimation. The fat includes all substances soluble in the ether-petroleum-spirit mixture.

##### Protein.

The total nitrogen of the samples was determined by the method of Kjeldahl. The percentage of protein was calculated from that of nitrogen on the assumption that the average weight of the protein present was 6.25 times that of the nitrogen.

##### Ash.

The percentage of inorganic material in the samples was determined by incinerating at a low red heat in a muffle furnace.

<sup>1</sup> I am indebted to Mr. D. J. Mares, State Meteorologist, for this information.

*Carbo-Hydrate.*

The percentage of carbo-hydrate was calculated by subtracting the percentages of fat, protein and ash from 100. In this calculation the assumption is made that everything not included among the fats, proteins and ash consists of carbo-hydrate. The figures obtained are thus maximal figures for the percentages of carbo-hydrate.

*Energy Content.*

For the calculation of the energy content of the various constituents of the diets it was assumed that each gramme of fat would produce 9.3 calories and that each gramme of protein or carbo-hydrate would produce 4.1 calories when burned in the body.

## RESULTS.

The figures for the results of the analyses and for the various data calculated from them are given in the following tables:

*Food Consumption.*

The figures in Table I. show the weight in grammes of the total dry food, fat, carbo-hydrate, protein and ash in the daily food of the men subjects.

The figures in Table II. show the corresponding values for a day's food of the women subjects.

TABLE I.—WEIGHTS OF FOOD-STUFFS CONSUMED IN TWENTY-FOUR HOURS BY MEN SUBJECTS (IN GRAMMES).

Subject.	Total Food.	Fat.	Carbo-Hydrate.	Protein.	Ash.
6	331.4	50.5	212.8	56.4	11.7
14	405.5	69.7	220.2	103.5	12.2
15	408.0	80.3	237.7	79.6	10.4
17	413.0	81.8	238.3	80.5	12.4
16	451.0	54.9	219.8	162.5	14.8
7	449.7	62.7	325.9	48.8	12.3
9	499.5	58.3	345.4	77.2	18.6
8	494.5	94.5	286.0	102.5	11.5
18	513.5	88.6	275.0	132.5	17.4
19	515.5	107.4	297.3	97.1	13.7
Mean	448.2	74.9	265.8	94.1	13.5

The above figures show that the total weights of dry food consumed in twenty-four hours by the men subjects ranged from 331.4 grammes to 515.5 grammes. The average weight of dry food was 448.2 grammes.

The weights of fat contained in the above weights of dry food ranged from 50.5 grammes to 107.4 grammes. The average weight of fat was 74.9 grammes.

The weights of carbo-hydrate in the food ranged from 212.8 grammes to 345.4 grammes. The average weight of carbo-hydrates was 265.8 grammes.

The weights of protein in the food ranged from 48.8 grammes to 162.5 grammes. The average weight of protein per day was 94.1 grammes.

The weights of ash in the food ranged from 10.4 grammes to 18.6 grammes. The average weight of ash per day was 13.5 grammes.

TABLE II.—WEIGHTS OF FOOD-STUFFS CONSUMED IN TWENTY-FOUR HOURS BY WOMEN SUBJECTS (IN GRAMMES).

Subject.	Total Food.	Fat.	Carbo-Hydrate.	Protein.	Ash.
10	315.0	61.3	156.8	80.1	15.4
2	346.7	48.8	252.0	35.6	10.3
1	337.0	69.5	201.2	59.3	7.0
20	363.0	78.0	226.0	52.8	6.2
3	392.3	59.8	270.7	50.0	11.3
12	435.5	38.0	293.5	99.0	15.0
11	390.0	113.7	219.0	46.8	10.5
4	461.5	95.3	286.1	66.6	13.5
5	489.5	77.7	310.9	83.1	17.8
Mean	392.1	71.2	245.9	63.6	11.8

The figures in the above table show that the total weights of dry food consumed in twenty-four hours by the women subjects ranged from 315.0 grammes to 489.5 grammes. The average weight of dry food per day was 392.1 grammes.

The weights of fat contained in the food ranged from 48.8 grammes to 113.7 grammes. The average weights of fat per day was 71.2 grammes.

The weights of carbo-hydrate in the food ranged from 156.8 grammes to 310.9 grammes. The average weight of carbo-hydrate consumed per day was 245.9 grammes.

The weights of protein in the food ranged from 35.6 grammes to 99.0 grammes. The average weight of protein per day was 63.6 grammes.

The weights of ash in the food ranged from 6.2 grammes to 17.8 grammes. The average weight of ash in the daily food was 11.8 grammes.

A comparison between the food consumed by the men and the women subjects shows that the total dry food average weight of the food consumed by the men subjects exceeded the average for the women subjects by 56.1 grammes or 11.7%.

The average weight of fat consumed by the men subjects was 3.7 grammes or 5% greater than the average for the women subjects.

The average daily weight of carbo-hydrates consumed by the men subjects was 19.9 grammes or 8% greater than the average for the women subjects.

The average weight of protein consumed by the men subjects per day was 30.5 grammes or 48% greater than the average for the women subjects.

The average weight of ash in the daily food of the men subjects was 1.7 grammes or 11.4% greater than that in the food of the women subjects.

The greatest difference between the average diets of the men and the women subjects lies in the considerably higher protein content of the former.

*Energy Consumption.*

The figures in Table III. show the energy values of the constituents of a day's food of the men subjects.

The figures in Table IV. show the corresponding values for a day's food of the women subjects.

TABLE III.—ENERGY VALUES OF FOOD-STUFFS CONSUMED IN TWENTY-FOUR HOURS BY MEN SUBJECTS (IN CALORIES).

Subject.	Total Food.	Fat.	Carbo-Hydrate.	Protein.
6	1,574	470	873	231
14	1,975	648	903	425
15	2,047	746	974	327
17	2,068	760	978	330
16	2,078	510	901	667
7	2,119	583	1,334	200
9	2,273	542	1,415	316
8	2,450	878	1,173	420
18	2,497	825	1,129	543
19	2,616	1,000	1,218	398
Mean	2,170	695	1,089	386

The figures in the above table show that the total calorific values of the food consumed in twenty-four hours by the men subjects ranged from 2,616 to 1,574 calories. The average total energy value of the diets was 2,170 calories.

The energy derived from the fat in the food ranged from 470 to 1,000 calories. The average amount of energy derived from fat was 695 calories.

The energy derivable from the carbo-hydrate of the food ranged from 873 to 1,334 calories. The average amount of energy contained in carbo-hydrate was 1,089 calories.

The energy contained in the protein of the diets ranged from 200 to 543 calories. The average amount of energy contained in protein was 386 calories.

TABLE IV.—ENERGY VALUES OF FOOD-STUFFS CONSUMED BY WOMEN SUBJECTS IN TWENTY-FOUR HOURS (IN CALORIES).

Subject.	Total Food.	Fat.	Carbo-Hydrate.	Protein.
10	1,540	570	642	328
2	1,632	454	1,032	146
1	1,712	645	824	243
20	1,867	725	926	216
3	1,872	556	1,111	205
12	1,960	353	1,201	406
11	2,124	1,058	899	192
4	2,331	885	1,173	273
5	2,337	722	1,274	341
Mean	1,925	652	1,009	261

The above table shows the total calorific values of the diets of the women subjects ranged from 1,540 to 2,337 calories per day. The average energy of the diets was 1,925 calories.

The amounts of energy derived from the fat of the diets ranged from 353 to 1,058 calories. The average amount of energy contained in the fat was 652 calories.

The energy values of the carbo-hydrates in the diets ranged from 642 to 1,274 calories. The average calorific value of the carbo-hydrate of the diets was 1,009 calories.

The energy contained in the protein of the diets ranged from 146 to 406 calories. The average energy content of the protein of the diets was 261 calories.

A comparison between the energy content of the daily food of the men and that of the women subjects, respectively shows that the food of the men subjects contained an average of 245 calories or 11.2% more per day than the women subjects.

This difference was made up by an excess in the diet of the men subjects of 43 calories in the fat, 80 calories in the carbo-hydrates and 125 calories in the protein.

#### Composition of Food.

The figures in Table V. show the percentage composition of the day's food of the men subjects.

The figures in Table VI. show the corresponding values for a day's food of the women subjects.

TABLE V.—PERCENTAGE COMPOSITION OF DIETS OF MEN SUBJECTS.

Subject.	Fat.	Carbo-Hydrate.	Protein.	Ash.
6	15.3%	68.9%	17.0%	3.5%
14	17.2%	54.3%	25.5%	3.0%
15	19.7%	58.4%	19.5%	2.6%
17	19.7%	57.5%	19.5%	3.0%
16	12.2%	48.5%	36.1%	3.3%
7	14.0%	72.5%	10.9%	2.7%
9	11.7%	69.1%	15.5%	3.7%
8	19.1%	56.9%	20.7%	2.3%
18	17.2%	53.5%	25.8%	3.4%
19	20.8%	57.8%	18.8%	2.7%
Mean	16.7%	59.3%	21.0%	3.0%

The above table shows that the percentage of fat in the diets of the men subjects ranged from 11.7 to 20.8. The average percentage of fat in the diets was 16.7.

The percentage of carbo-hydrate in the diets ranged from 48.5 to 72.5. The average percentage of carbo-hydrate in the diets was 59.3.

The percentage of protein in the diets ranged from 10.9 to 36.1. The average percentage of protein was 21.0.

The percentages of ash in the diets ranged from 2.3 to 3.7. The average percentage of ash was 3.0.

TABLE VI.—PERCENTAGE COMPOSITION OF DIETS OF WOMEN SUBJECTS.

Subject.	Fat.	Carbo-Hydrate.	Protein.	Ash.
10	19.5%	39.9%	25.6%	3.9%
2	14.1%	72.8%	10.3%	3.0%
1	20.6%	59.6%	17.6%	2.1%
20	21.5%	62.3%	14.5%	1.7%
3	15.6%	70.9%	13.1%	3.0%
12	8.6%	67.0%	22.7%	3.4%
11	30.0%	56.0%	12.0%	2.7%
4	20.6%	62.0%	14.4%	2.9%
5	15.7%	63.5%	17.0%	3.6%
Mean	18.2%	62.7%	16.2%	3.0%

The figures in the above table show that the percentages of fat in the daily diets of the women subjects ranged from 14.1 to 30.0. The average percentage of fat in the diets was 18.2.

The percentages of carbo-hydrates in the diets ranged from 39.9 to 72.8. The average percentage of carbo-hydrate was 62.7.

The percentage of protein in the diets ranged from 10.3 to 25.6. The average percentage of protein in the diet was 16.2.

The percentages of ash in these diets ranged from 1.7 to 3.9. The average percentage of ash in the diet is 3.0.

A comparison between the percentage compositions of the diets of the men subjects and the women subjects shows that the average percentage of fat in the diets of the men subjects was 1.5 lower than the average for the women subjects.

The average percentage of carbo-hydrate was 3.4 lower in the diet of the men subjects than in that of the women subjects.

The average percentage of protein was 4.8 higher in the diet of the men subjects than in that of the women subjects.

The average percentage of ash was the same in the diet of the men subjects as in that of the women subjects.

#### Distribution of Energy.

The figures in Table VII. show the percentage distribution of the total energy among the various constituents of a day's food of the men subjects.

The figures in Table VIII. show the corresponding values for a day's food of the women subjects.

TABLE VII.—PERCENTAGE DISTRIBUTION OF ENERGY IN DIETS OF MEN SUBJECTS.

Subject.	Fat.	Carbo-Hydrate.	Protein.
6	29.9%	55.5%	14.7%
14	32.8%	45.6%	21.5%
15	36.4%	47.5%	16.0%
17	36.7%	47.2%	16.0%
16	24.6%	43.4%	32.1%
7	27.5%	63.0%	9.5%
9	23.8%	62.3%	13.9%
8	35.8%	47.0%	17.1%
18	33.0%	45.2%	21.7%
19	38.2%	46.5%	15.2%
Mean	32.0%	50.2%	17.8%

The figures in the above table show that the percentage of the total energy value of the diets of the men subjects which was derived from fat ranged from 23.8 to 38.2. The average percentage of energy derived from fat was 32.0.

The percentages of the energy derived from the carbo-hydrate of the diets ranged from 43.4 to 63.0.

The average percentage of energy derived from carbo-hydrate was 50.2.

The percentage of the energy derived from protein ranged from 9.5 to 21.7. The average percentage of energy derived from protein was 17.8.

TABLE VIII.—PERCENTAGE DISTRIBUTION OF ENERGY IN DIETS OF WOMEN SUBJECTS.

Subject.	Fat.	Carbo-Hydrate.	Protein.
10	37.0%	41.7%	21.3%
2	27.8%	63.4%	9.0%
1	37.6%	48.1%	14.2%
20	38.8%	49.6%	11.6%
3	39.7%	59.3%	11.0%
12	18.0%	61.3%	20.7%
11	49.2%	41.8%	9.0%
4	38.0%	50.4%	11.7%
5	30.9%	54.5%	14.6%
Mean	33.8%	52.5%	13.6%

The figures in the above table show that the percentage of the total energy of the diets of the women subjects which was derived from fat ranged from 18.0 to 49.2. The average percentage of energy derived from fat was 33.8.

The percentage of energy derived from the carbo-hydrate of the diet ranged from 41.7 to 63.4. The average percentage of energy derived from carbo-hydrate was 52.5.

The percentage of energy derived from protein ranged from 9.0 to 21.3. The average percentage of energy derived from the protein of the diets was 13.6.

A comparison of the average percentage distribution of the energy among the different food-stuffs shows that the percentage of the total energy derived from fat was 1.8 less for the men subjects than for the women subjects.

The average percentage of energy derived from carbo-hydrate was 2.3 less for the men subjects than for the women subjects.

The average percentage of energy derived from protein was 4.2 greater for the men subjects than for the women subjects.

#### Metabolism of Subjects.

The figures in Table IX. show the heights, weights and surface areas of the men subjects and the energy in a day's food calculated for each kilogram of body weight and square metre of area of body surface.

The figures in Table X. show the corresponding values for the women subjects.

The average figures in each case have been corrected for the weights of clothing.



TABLE IX.—METABOLISM OF MEN SUBJECTS CALCULATED FROM FOOD CONSUMPTION.

Subject	Age in Years.	Height in Centimetres.	Weight in Kilograms.	Surface in Square Metres.	Calories per 24 Hours.	
					Per Kilogram.	Per Sq. Metre.
6	55	179	71.8	1.90	21.9	830
14	20	168.5	59.4	1.67	33.3	1,182
15	26	178	60.2	1.75	34.1	1,172
17	20	178	63.4	1.80	32.8	1,150
16	21	161	62.5	1.66	33.1	1,243
7	21	173	62.6	1.74	33.8	1,218
9	31	169	57.3	1.65	39.6	1,376
8	30	169	65.7	1.75	37.3	1,400
18	21	178	63.9	1.80	39.1	1,390
19	23	168	53.9	1.60	48.2	1,620
Mean	—	171.5	58.1	1.63	37.4	1,330

The above table shows that the ages of the men subjects ranged from 20 to 55 years. The average age was 27 years.

The heights of these subjects ranged from 161 to 179 centimetres. Their average height was 171.5 centimetres.

The weights of these subjects clothed ranged from 53.9 kilograms to 71.8 kilograms. The average weight unclothed was 58.1 kilograms.

The surface area of these subjects ranged from 1.60 square metres to 1.90 square metres. The average surface area was 1.63 square metres (corrected for weight of clothing).

The number of calories in the food consumed per kilogram of clothed body weight per twenty-four hours ranged from 21.9 to 48.2. The average consumption of energy per kilogram of unclothed body weight per twenty-four hours was 37.4 calories.

The number of calories in the food consumed per square metre of body surface per twenty-four hours ranged from 830 to 1,620. The average consumption of energy per square metre of body surface per twenty-four hours was 1,330 calories.

TABLE X.—METABOLISM OF WOMEN SUBJECTS CALCULATED FROM FOOD CONSUMPTION.

Subject	Age in Years.	Height in Centimetres.	Weight in Kilograms.	Surface in Square Metres.	Calories per 24 Hours.	
					Per Kilogram.	Per Sq. Metre.
10	20	158	49.6	1.43	31.1	1,070
2	21	162.5	47.3	1.48	34.5	1,100
1	21	170	52.0	1.59	32.9	1,080
20	21	155	52.0	1.48	35.8	1,260
3	21	161.5	58.7	1.62	31.9	1,160
12	20	158	52.6	1.52	39.1	1,360
11	20	170	51.7	1.58	41.1	1,350
4	20	167.5	52.3	1.59	44.6	1,475
5	20	160	49.8	1.50	46.9	1,560
Mean	—	162.5	48.3	1.50	39.0	1,283

The above table shows that the ages of the women subjects ranged from 20 to 21 years.

The heights of these subjects ranged from 158 to

170 centimetres. The average height of these subjects was 162.5 centimetres.

The weights of these subjects clothed ranged from 47.3 kilograms to 58.7 kilograms. The average weight of the subjects unclothed was 48.3 kilograms.

The area of the body surface of these subjects ranged from 1.43 square metres to 1.62 square metres. The average area of body surface was 1.50 square metres (corrected for weight of clothing).

The number of calories in the food consumed per day per kilogram of clothed body weight ranged from 31.1 to 46.9. The average daily consumption of calories per kilogram of unclothed body weight was 39.0.

The number of calories in the food consumed per day per square metre of body surface ranged from 1,070 to 1,560. The average daily consumption of energy per square metre of body surface was 1,283 calories.

It will be seen from the above tables that no simple relation is evident between the weights of the subjects of either series and the number of calories per kilogram in the daily food or between the surface areas of the subjects and the number of calories per square metre in the daily food.

A comparison between the average figures for the heights of the men subjects and those for the heights of the women subjects shows that the average height of the men subjects was nine centimetres or 5% greater than that of the women subjects.

The average weight of the men subjects was 9.8 kilograms or 12% greater than that of the women subjects.

The average surface area of the men subjects was 0.13 square metre or 9% greater than that of the women subjects.

The average number of calories consumed per kilogram per day was 1.6 or 4% less for the men subjects than for the women subjects.

The average number of calories consumed per square metre per day was 47 or 3.3% greater for the men subjects than for the women subjects.

The last two sets of figures show a greater consumption of energy per unit weight on the part of the women subjects, as would be expected on account of the smaller size. The energy consumption per unit area, on the other hand, was slightly greater for the men subjects than for the women subjects.

The basal metabolisms of the present subjects are not known, but Harris and Benedict<sup>(4)</sup> have prepared a series of tables which they have applied for the prediction of the basal metabolism of normal adult subjects in the United States from their weight, height and age. It might be rather misleading to compare the energy consumption of the present subjects individually with the basal metabolism as predicted from the tables of Harris and Benedict. The figures quoted by these authors show that the actual-basal metabolism, even of American subjects, may depart as much as 17% from the predicted value, while in the case of subjects of a different nationality (German) the departure may be as much as 25%.

It may, however, be of interest to compare the predicted basal metabolism of subjects of the average weights, heights and ages of those of the present

series with the average energy content of their daily food. This comparison can be made from the figures below:

TABLE IX.—COMPARISON OF PREDICTED BASAL METABOLISM WITH ENERGY CONTENT OF DAILY FOOD.

Comparison.	Men.	Women.
Average Weight . . . . .	58.1 kilograms	48.3 kilograms
Average Height . . . . .	171.5 cm.	162.5 cm.
Average Age . . . . .	27 years	20 years
Average Energy in Food . . . . .	2,170 calories	1,925 calories
Predicted Basal Metabolism	1,536 calories	1,330 calories
Excess of Energy in Food . . . . .	634 calories	595 calories

The above figures show that the men subjects had an average balance of 634 calories above their predicted average basal metabolism.

The women subjects had an average balance of 595 calories above their predicted average basal metabolism.

The average basal metabolism of the men subjects was 206 calories or 11.5% higher than that of the women subjects. The average excess of energy in the diet was 39 calories or 10.7% greater for the men subjects than for the women subjects.

Great caution must be exercised, however, in applying even the average figures for the basal metabolism of subjects in the United States of America to subjects in another country.

Recently de Almeida<sup>(1)</sup> has shown that the basal metabolism of Brazilians of European descent is distinctly lower than that of the corresponding types of person in the United States and it is possible that some difference may exist also between the inhabitants of Australia and those of the United States.

#### SUMMARY.

Analyses of a day's food of nineteen university students and teachers showed the following average weights of the different substances consumed:

For ten men subjects: Total food, 448.2 grammes; fat, 74.9 grammes; carbo-hydrate, 265.8 grammes; protein, 94.1 grammes; ash, 13.5 grammes.

For nine women subjects: Total food, 392.1 grammes; fat, 71.2 grammes; carbo-hydrate, 245.9 grammes; protein, 63.6 grammes; ash, 11.8 grammes.

The average energy content of the food was 2,170 calories for the men subjects and 1,925 calories for the women subjects.

The average height and weight of the men subjects were 171.5 centimetres and 58.1 kilograms; of the women subjects, 162.5 centimetres and 48.3 kilograms.

The average energy consumption per day per kilogram of body weight was 37.4 calories for the men subjects and 39.0 calories for the women subjects.

The average energy consumption per day per square metre of body surface was 1,330 calories for the men subjects and 1,283 calories for the women subjects.

The main difference between the average diets of the men subjects and that of the women subjects was that the former contain an average excess of 145 calories, 3.7 grammes of fat, 19.9 grammes of

carbo-hydrate, 30.5 grammes of protein and 1.7 grammes of ash over the latter.

The proportion of fat and carbo-hydrate in the average diet of the women subjects was slightly the higher, but the proportion of protein in the average diet of the men subjects was markedly the higher.

In conclusion, I wish to express my thanks to Professor H. G. Chapman, in whose laboratory this work was done, and to the teachers and students whose enthusiastic cooperation made the work possible.

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- <sup>(3)</sup> Du Bois and Du Bois: Cited by Lusk, "Science of Nutrition," page 125, Philadelphia and London, 1917.
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## Reports of Cases.

### NON-OBSTRUCTIVE CONGENITAL JAUNDICE AND SPLENOMEGALY.<sup>1</sup>

By LESLIE W. DUNLOP, M.B.,

Honorary Assistant Physician to the Sydney Hospital;  
Honorary Physician, Mater Misericordiae Hospital,  
North Sydney.

THE unusual nature of the following case and the difficulty in making a diagnosis are of sufficient interest to warrant my reporting it in full:

J.W., aged forty-one years, an invalid pensioner and formerly a painter, was admitted to hospital complaining of "bilious attacks," accompanied by vomiting and occasional pain. He has been jaundiced as far back as he can remember. The bilious attacks come on occasionally. The pain is not severe in character. There is no history of hæmatemesis and he has not noticed any pallor of his motions. Lately the urine has been of a dark colour. He has had no attacks of pruritus. About twenty years ago he injured his legs, ulceration supervened and did not heal. When he was in hospital in 1907 on account of the ulceration of his legs, his attention was drawn to the enlargement of the spleen.

Neither the splenomegaly nor the jaundice have occasioned him any inconvenience.

Inquiry into his previous history shows that he contracted malaria twenty years ago. The last attack occurred ten years ago. He has been married for nineteen years and has two children; the youngest is eleven years of age. His wife has had no miscarriages. There is no history of venereal infections, but he admits a "moderate" consumption of alcohol. As far as he knows, none of his relatives has been similarly affected.

At the present time the skin and the sclerotics are moderately jaundiced. The spleen is enlarged and its border may be felt about two centimetres below the umbilicus. The liver is not appreciably enlarged. The stools are normal in colour. The urine contains no bile, but has a heavy cloud of urates. Uroerythrin is present, but no urobilin can be detected. The legs are ulcerated and the ulcers are surrounded by extensive areas of pigmentation. A blood count revealed the fact that the red cells numbered 3,810,000, the hæmoglobin value was 70. Anisocytosis, definite punctate basophilia and polychromatophilia were present. The white cells numbered 5,400 and of these the polymorpho-nuclear cells were 70%, small lymphocytes were

<sup>1</sup> Read at a meeting of the New South Wales Branch of the British Medical Association on July 14, 1922.

22%, large lymphocytes were 5%, while transitional, eosinophile and basophile cells were each 1%. No fragility of the red cells was detected. Bilirubin was present in the blood. A van den Bergh test was performed by Dr. Wardlaw and the result indicated the presence of a non-obstructive type of jaundice. The patient's blood has been subjected to the Wassermann test and no reaction has been obtained. An examination of the blood failed to reveal the presence of any malarial parasites. Dr. Hamilton has examined the ulcers on the patient's legs and is of the opinion that they are due to trauma.

In considering the nature of the disease from which the patient is suffering, it will be seen that the combination of symptoms is unusual. There is jaundice of long-standing duration, possibly congenital. Splenomegaly is present, with acholuria and secondary anaemia. At the same time there is no definite interference with the general health. The "bilious attacks" complained of may be due to hæmolytic crises, but none was observed while he was in hospital.

These symptoms are suggestive of the Minkowski familial type of congenital hæmolytic acholuric jaundice and splenomegaly. Osler says that cases of this type are not always familial; but he lays it down as essential that there must be an increased fragility of red cells. This does not obtain in the present case, but, as the test was only made once, it may not be conclusive evidence. Malaria, syphilis, cirrhosis of the liver and Banti's disease are apparently excluded.

The available evidence suggests that the condition is a non-obstructive congenital jaundice and splenomegaly, the cause of which is not clear. It may be hæmolytic in origin or due to some functional derangement of the liver cells.

#### HYSTERECTOMY, SALPINGO-OÖPHORECTOMY AND ABDOMINO-PERINEAL EXCISION OF THE RECTUM IN ONE STAGE.<sup>1</sup>

By HOWARD BULLOCK, M.B., CH.M. (SYD.), F.R.C.S. (ENG.),  
Senior Honorary Surgeon, Renwick Hospital for Infants;  
Honorary Assistant Surgeon, Sydney Hospital.

THE following case is instructive in that it demonstrates the necessity, especially in elderly patients, of excluding all other possible sources of bleeding in the presence of hæmorrhoids which are to all intents and purposes the cause of the hæmorrhage *per anum*. It also shows the advantage of complete excision of the rectum in one stage after the abdomino-perineal method of Miles, unless there is some very strong indication to the contrary.

Mrs. L.P., aged fifty years, first consulted me seven years ago for minor ailments; she then had slight hæmorrhoids. She has been married twenty-seven years and has four children, the eldest being twenty-four and the youngest twelve years of age. There have been no miscarriages. All the children enjoy good health.

She consulted me again on December 12, 1921, "for bleeding piles and pain in the back," which she described as being occasionally bearing down in character, but more often dull and aching and going towards the tip of the spine. The rectal bleeding had been present for six months and invariably had taken place at stool.

On examination, huge cauliflower-like hæmorrhoids were seen by the proctoscope and *per vaginam* a large fibroid tumour of the uterus and an enlarged right cystic ovary were palpated. A diagnosis in accordance with the examination was made. It was decided to operate first on the uterus and on opening the abdomen the diagnosis was confirmed. In addition, however, there was also found an apparently malignant growth of the sigmoid at its junction with the rectum. The pelvic cavity being largely filled by the fibroid and the right ovary, it was necessary to remove both these structures in order to get sufficient room to attack the cancer of the bowel. A total hysterectomy was performed and the right Fallopian tube and ovary were removed. The pelvic colon and rectum were taken out by the abdomino-perineal route after the method of Miles, slightly modified. The patient was in bed within

two hours of making the abdominal incision and, colloquially speaking, did not turn a hair.

In *The British Medical Journal* of November 13, 1920, there is a most illuminating discussion on the surgical treatment of cancer of the rectum and it is noteworthy that Ernest Miles and Charles Mayo, surgeons of world-wide reputation, recommend excision of the rectum by the abdomino-perineal route. Many operations have been devised to deal with cancer in this region, but, excepting that of Miles, they all fall short of the one essential in treating all carcinomatous growths, namely, removal not only of the growth itself, but of what Miles terms the three zones of spread. He points out that extension takes place by direct growth through continuity of tissue, by the lymphatic system and by the venous system.

Miles states that all operations devised to retain the anus must of necessity preserve not only the greater part of the pelvic meso-colon, as otherwise the colon would slough and render the operation useless, but also the *levator ani* muscles, the ischio-rectal fat, the external sphincter muscle and the peri-anal skin, all of which are in the immediate zone of spread.

Miles's observations show that the tissues most liable to be affected by lymphatic extension in cancer of the rectum are the ischio-rectal fat, the *levator ani* muscles, the ano-rectal glands and the pelvic meso-colon.

His recurrence mortality when using the perineal operation reached the very high level of 94.4% and Grey Turner, Lockhart-Mummery and Gordon Watson quote statistics endeavouring to prove that, considering the high mortality of Miles's abdomino-perineal excision, there is, on the whole, less risk to the patient by some form of sacral excision. The only objection to Miles's operation raised by the dissenters from it is the associated mortality rate, though all admit that it is the ideal operation. Ryall points out that hysterectomy was associated with an enormous mortality when first practised, but that this has been overcome in expert hands and he predicts that the same will happen in regard to the radical operative treatment of cancer of the rectum when better understood and more generally undertaken.

Miles's concluding remarks in this paper are worthy of consideration. He says that cancer of the rectum has a mortality rate of 100% if left to run its course without treatment. The operation of choice is the abdomino-perineal and this should be done at an early stage. It should not be used in the case of patients unfitted to stand the strain of a severe surgical operation. For these some palliative measure, such as colostomy or perineal excision, may be carried out. He also adds that, in the surgical treatment of cancer, the utility of an operation should be measured by the degree of immunity it confers from recurrence and not from a low operation mortality.

The operation upon the patient L.P. was completed in well under two hours and this is mentioned to emphasize the fact that in favourable cases the rectum can be excised by the abdomino-perineal route in a few minutes over the hour with comparatively speaking little shock.

Miles's operation is comparable to the block dissection of the neck for malignant disease of the buccal cavity as enunciated by Crile and is, in my humble opinion, the only operation devised for excision of the rectum which gives a thorough removal of the growth and its immediate lymphatic drainage area. When Miles taught me this operation eleven years ago, he remarked that the performance of his operation in two stages, the abdominal part first and the perineal portion at a later date, was the refuge of the destitute!

It is now nearly seven months since the patient, L.P., was operated upon. She has gained in weight, has full control of the artificial anus and is enjoying the best of health.

Age apparently need be no bar to the complete operation, for another patient—H.L.—whom I also show to-night, was sixty-seven years of age when operated upon for cancer of the rectum, is now in the best of health at seventy years of age and has gained over nineteen kilograms (three stone) in weight since the operation. He, too, had the complete operation at one sitting.

I am obliged to Dr. P. E. Walton Smith for the pathological report on Mrs. L.P. He found the several lesions to be adeno-carcinoma of the rectum, simple fibroid of the uterus and simple cystic ovary.

<sup>1</sup> Read at a meeting of the New South Wales Branch of the British Medical Association on July 14, 1922.



## Reviews.

### TROPICAL MEDICINE.

THE English language possesses one of the best practical books on tropical diseases in Manson's "Treatise," a handy book without which a practitioner in the tropics could not well afford to be.

Castellani and Chalmers' book, a veritable treasure trove of information, followed Manson's book, giving a short survey of parasites and diseases; it suffers from the one disability that the authors attempted to give too much information in too small a compass.

Everybody interested in scientific tropical medicine will therefore welcome with joy the appearance of a large treatise on tropical medicine destined to fill a gap which everybody working in the field has deplored on many occasions.<sup>1</sup> The editors, Lieutenant-Colonel Byam and Major Archibald, can be congratulated on the excellent selection of contributors they have been able to secure. Nearly every name on the list is well known in the particular branch on which he writes and the editors have given the full titles and appointments of every contributor, the long list of which will certainly awake full confidence on the part of the uninitiated and arouse double the interest in the perusal of the articles.

The picture of the late Sir Patrick Manson, the true founder of scientific tropical medicine, appears as a frontispiece of the first volume and Manson's scientific spirit and his careful discrimination seems to pervade the stately volume of 855 pages, devoted to tropical hygiene and sanitation, nursing, entomology, laboratory methods, snakes and snake poisoning and toxicology.

In the preface the editors state that they have "attempted to help to promote a closer relationship between the members of the medical profession throughout the English-speaking world by producing a book which will serve the student as an introduction to the leading teachers of tropical medicine throughout the British Empire, in the United States of America and in other countries where the English language is spoken." We can gladly assert that, as far as the first volume is concerned, the editors have well succeeded in their endeavour.

A. Balfour is the author of the first section on "Personal Hygiene and Minor Tropical Sanitation." No more suitable author could have been selected, having in mind his book on "War Against Tropical Disease" and his remarkable knowledge of literature. Hardly any aspect of tropical sanitation has been neglected. A short introductory chapter is devoted to physiology in the tropics and general prophylaxis. All methods of mosquito protection are enumerated and in many chapters the experiences gained during the war have been utilized. Housing, food, water and disposal of refuse are considered in detail. The chapter on destruction of excreta is apt to open the eyes of the reader as to the varying construction of latrines in use throughout the tropics, which seems to indicate that the ideal system has to be found yet. As might be expected, not all aspects are treated at the same length; septic tank systems, for example, are dismissed in half a page or so, whereas disinfection occupies about thirty pages and even details are given how to use the Clayton apparatus. In the disposal of the dead a detailed account of embalming is given.

Nursing in the tropics is written by Tull Walsh. It is a difficult subject to deal with; the author has not given anything new, save, perhaps, some recipes of dietetic preparations. Notes on the care of children occupy only about seven pages. The author would have done well to peruse several of the standard books, such as Birch's "Management of Children in India," before settling down to his task. Exception may be taken to some general statements, such as "European children should be sent to England when six years of age."

It would be interesting to learn the author's reason whether a change is imperative for health or other

economic reasons. Why six years? Similar statements are copied from text-book to text-book and are used in controversies as authoritative utterance, for which, however, the original authority and the original reason are difficult to discover.

The chapter on "Entomology" occupies nearly 230 pages and has been planned and edited by L. Lloyd in a most able manner; only insects directly and indirectly concerned in disease production are considered.

The names of contributors such as Warburton, MacGregor, Malcolm Watson and L. O. Howard are so well known that we should indeed be surprised not to find their writings of the highest standard. A number of well-executed plates of the different anopheles help to give a clear idea of their appearance. Of all insects mentioned, life history, anatomy and bionomics are given.

Malcolm Watson, of Malayan fame, has written on mosquito control. Different biting flies, such as glossina, tabanids and others are very well illustrated.

A section on laboratory methods by Archibald is somewhat patchy. Some important points are omitted, such as the selection of glass slides suitable for the tropics that do not become frosted. Anybody desirous of preparing culture media for bacteriological use would have to consult other fuller treatises on this subject and it seems perhaps superfluous to add such chapters to a book on the practice of medicine in the tropics.

The same criticism might perhaps hold good regarding sera and vaccines, written by D. Harvey, which would not enable anyone not versed in the subject to prepare a vaccine.

The section devoted to the nature and toxicological action of snake venom is very interesting reading.

The chemical investigation for medico-legal purposes is expounded by W. M. Colles, of Egyptian fame.

The first volume of "Practice of Medicine in the Tropics" is full of the most interesting information, is very well got up and can be thoroughly recommended. If the next two volumes come up to the same standard—and the qualifications of the contributors assures this—the English language will possess a large treatise on medicine in the tropics of equal merit, if not superior, to any book hitherto published in any language.

### CONDENSED BACTERIOLOGY.

DR. PITFIELD'S pocket book on bacteriology<sup>1</sup> is intended for medical students preparing for examination and for practitioners of medicine who desire to acquaint themselves with the principal facts of the science of bacteriology. It is doubtful whether such books are in much demand or of much use.

More than the first half of this book is devoted to general principles, immunity and laboratory technique. The chapter dealing with the classification of bacteria is not very enlightening. Immunity is explained in an orthodox fashion. The author distinguishes between complement fixation and complement deviation, the latter occurring where there is too much free amboceptor and too little complement, so that not enough complement remains to effect lysis. From the practical point of view we doubt whether this occurs in complement fixation tests as carried out by approved methods. In some laboratories free amboceptors are separated after sensitization of blood corpuscles, but it is more usual to use a constant excess of amboceptor and several doses or units of complement.

In discussing transfusion, the author states "that homologous bloods should be mixed, but Groups I. or IV. respectively shows it safe to use blood which agglutinates the recipient's cells." The reader should interpret this to mean either Group I. of Jansky or Group IV. of Moss, because only one group is a so-called universal donor.

A short account is given of the newer methods of titration of culture media. The second half of the book contains short descriptions of the pathogenic bacteria and some protozoa. This part is illustrated and on the whole is well done.

<sup>1</sup> "The Practice of Medicine in the Tropics," by Many Authorities; Edited by Lieutenant-Colonel W. Byam, O.B.E., and Major R. G. Archibald, D.S.O.; Volume I.; 1921. London: Henry Frowde and Hodder & Stoughton; Royal 8vo., pp. 856, general index, 35 coloured plates and 334 figures in the text. Price: £4 4s. net.

<sup>2</sup> "A Compend of Bacteriology, including Pathogenic Protozoa," by Robert L. Pitfield, M.D.; Fourth Edition; 1922. Philadelphia: P. Blakiston's Son & Company; Crown 8vo., pp. 297, with four plates and eighty-two other illustrations. Price, \$2.00.



## The Medical Journal of Australia

SATURDAY, SEPTEMBER 9, 1922.

### The Control of Private Practice.

THE BRITISH MEDICAL ASSOCIATION has for many years endeavoured to maintain an equitable, dignified and honourable status of the medical profession by the establishment of rules of ethical behaviour of its members and by the introduction of safeguards in contract and public practice. The ethical rules have been devised with extreme caution; each has been subjected to repeated consideration and has been found to act for the benefit of the profession and of the public. The General Medical Council in the United Kingdom, a statutory body with the powers of a court of law, is competent to deal with certain professional offences and in the course of time has evolved a recognized definition of "infamous conduct in a professional respect." The British Medical Association has no power to investigate charges of professional misconduct. It cannot compel the attendance of witnesses and cannot take evidence on oath. The General Medical Council in the old country and the Medical Boards in Australia are the proper bodies to carry out these investigations when a complaint is lodged in the prescribed form. If a member of the medical profession is found, after judicial inquiry, to be guilty of infamous conduct in a professional respect, a penalty can be inflicted which deprives him of the right to practise his profession. The British Medical Association, like any other society or club, requires its members to conform to its regulations and, like other societies, it can determine the membership of anyone who refuses to do so. History reveals that the Association always gives its members charged with breaches of the regulations ample opportunity to express contrition and to re-engage to observe the rules. In the event that a recalcitrant member refuses to recognize these rules, the expedient of expulsion is adopted in order that the honour and interests of the medical profession may be preserved.

The public at times refers to medical etiquette as if the regulations and rules of the British Medical Association and the findings of the General Medical Council were formulæ for the benefit of individual practitioners, even if they reacted to the detriment of the community. Perusal of Robert Saundby's classic on medical ethics or of any other recognized work on this subject would at once disillusion the layman. Medical ethics exist solely and only for the maintenance of high professional ideals and for the justification of a full trust on the part of the public in the medical profession.

At times public bodies, semi-public undertakings and large private concerns act as employers of medical practitioners. The collective employment of doctors for specific purposes is a real necessity, but it is capable of such abuse that an organized, representative association is needed to protect both its members and those to whom these members render professional services. The rules and regulations introduced by the British Medical Association in connexion with lodge, hospital and other medical services have for their object the elimination of repressive conditions and the encouragement of a high standard of practice. The British Medical Association neither desires to exercise nor exercises any restrictions on the manner in which the members conduct their lodge, hospital or other salaried practices, provided that the accepted ethical rules are recognized.

Hitherto the Association has deliberately refrained from framing rules in reference to the conduct of private practice. The medical practitioner is at liberty to fix his fees without reference to the Association. He can set up in practice where he likes and can buy a practice or sell his own without sanction. He can limit his practice in any way held to be convenient or expedient and can apply for any appointment advertised as vacant. Under certain conditions the British Medical Association, as an organization founded for the benefit of the medical profession, advertises the fact that members are requested to communicate with the honorary secretary of the Branch concerned before applying for a particular appointment, in order that he may be in possession of full information concern-

ing the position he desires to obtain. Neither coercion nor compulsion is exercised.

Recently the Federal Committee of the British Medical Association in Australia considered certain proposals connected with the display on name plates of information concerning specialties. The rule requiring a member to seek and obtain the sanction of the Council of the Branch to indicate on the name plate the specialty in which he practices, is based on the objection raised to professional advertisement. In medical ethical rules it is clearly set out that advertisements must be avoided. Saundby laid it down that the display of a name plate with a simple indication that the owner is a medical practitioner, but without any additions, is the only form of admissible advertising. The use of the title "Dr." or of the words "Surgeon" or "Physician" or both has for many years received general sanction. In some towns in England the majority of the medical practitioners prefix a plain "Mr." to their names on their name plates, while in many cities, both here and in other parts of the Empire, surgeons adopt this method without inconvenience or detriment to their practices. The British Medical Association undoubtedly disapproves of undignified and showy legends on brass, because of the very small distinction between these methods and frank advertisement. It does not, however, concern itself with the class of practice followed. The specialist or aspirant to this distinction is not required to obtain the sanction of the Council of his Branch before he starts practice in this manner; the approval is merely required in regard to the display of the indicative words on the name plate. In brief, the British Medical Association does not interfere with the private practices of its members.

#### MINERS' NYSTAGMUS.

MANY of the publications of the Medical Research Council have been characterized by the fact that the author or authors are men with strong views. The imprimatur of the Council tends to lend authority to the views expressed and to the doctrines propounded, even when these views and doctrines still lack universal acceptance. The Council usually exercises wisdom in the selection of authors and, as a result, the value of the majority of these pamphlets is undoubtedly great. One of the most recent reports of the Council is that on miners'

nystagmus.<sup>1</sup> The special committee commissioned to investigate this affection and to make recommendations aiming at its control comprises Dr. J. S. Haldane, F.R.S., Professor E. L. Collis and Drs. T. L. Llewellyn, G. H. Pooley and W. H. R. Rivers. The greater part of the report has been written by Dr. Llewellyn, whose knowledge of miners' affections is undoubted, even if his opinions have been challenged in many quarters and by many authorities.

It appears that miners' nystagmus was first recognized by Gillet, of Sheffield, in 1854. As early as 1832 C. Turner Thackrah wrote of a peculiar affection of the eyes of miners. Decondé published the first accurate description of the condition in 1861. From the year 1875 two divergent doctrines were elaborated on the causation of this affection. The first attributed the nystagmus to the constrained position assumed by the miners at work and to the upward direction of their vision. The second ascribed it to a deficiency of illumination. In the course of years much information has been collected in regard to the incidence, the course, the concomitants and the outcome of the affection. With a large amount of accumulated knowledge, the result of repeated investigations, the committee went systematically to work and endeavoured to reach finality in regard to each factor. The evidence on which Dr. Llewellyn bases his contention that the essential cause of miners' nystagmus is defective light, is unanswerable. Before dealing with this evidence, it may be advisable to refer to the definition of the disease. The official definition is: "The disease known as miners' nystagmus, whether occurring in miners or others and whether the symptom of oscillation of the eyeballs be present or not." Dr. Llewellyn recognizes a latent and a manifest form. It would seem that, since the latent or early stage of the affection can be recognized, the legislative definition of miners' nystagmus without nystagmus has been introduced. The first manifestation is failure of sight, usually noted at night-time or when the patient is working underground. The failure of sight is characteristic and is progressive, unless the miner gives up his underground work. Even at an early stage the patient notices movements of surrounding objects. He complains of the lights carried by his fellow workers bobbing up and down and his annoyance may lead to quarrelsomeness. Sleep is disturbed, giddiness supervenes and temporary loss of sight occurs on stooping or after exertion. The man complains of headache and by this time nystagmus will be present. At times neurotic or even hysterical symptoms manifest themselves and in the last stage the man may be totally incapacitated. The oscillations are usually elliptical and rotatory, regular and synchronous in both eyes. Lid spasm is common and tremor of the head is a late but constant sign.

The incidence of the disease among underground miners is given at about 0.2%. It becomes manifest more frequently during the dull winter months than

<sup>1</sup> "First Report of the Miners' Nystagmus Committee"; Special Report Series, No. 65; Privy Council, Medical Research Council, 1922.

during the bright summer months. The affection has become commoner since its occurrence has been recognized as a ground for compensation. Dr. Llewellyn adduces a great amount of information concerning the correspondence between illumination and the incidence of the affection. He shows quite clearly that age, nature of the work, depth of the collieries and class of coal are not ætiological factors. In every mine visited it was found that the incidence of the disease was high where safety oil lamps were employed and relatively low where candles or electric light were used. Photometric measurements were taken at the coal face to determine the amount of light present. As it was impossible to ascertain the actual amount of light reflected on the retina of the workers, the intensity of the light employed and the surface brightness of the coal were determined and the result was expressed in foot candles. A standard candle has set up by the International Illumination Commission. To the uninitiated the fact that the illumination in a pit where a 0.8 candle-power candle is used, varies between 0.1 and 0.2 foot candle may be somewhat surprising. In some of the mines in South Wales where safety oil lamps are used, the illumination is as low as 0.009 to 0.02 foot candle. The conditions of work and more particularly the distance of the source of light from the surface has been carefully examined. It was ascertained that as the lamps become dirty after a short period of work, the illumination decreases considerably. Experience has shown that the incidence of miners' nystagmus is rare in shallow mines where candles are used, but at times it has been the habit of managers to transfer men with eye trouble from the deep pits where safety lamps are used to the candle pits. As a result, many of the transferred men manifested typical nystagmus within a short time of their arrival in the candle pits. It is, however, to be noted that in some of the candle pits the illumination is bad and in these the incidence of miners' nystagmus is higher. Evidence has further been collected concerning the value of dusting the surface with white powder or whitewashing the walls, to increase the surface brightness. This expedient has sufficed to increase the illumination to a very considerable extent and at the same time to reduce the incidence of nystagmus. Electric cap lamps seem to provide the best lighting conditions for the men. Unfortunately, in deep, hot mines, where men work stripped to the waist, the wearing of a cap with the electric bulb attached and of a belt carrying the battery causes much discomfort. In the Yorkshire coalfields some striking results have been produced by the introduction of electric lamps. In those mines where less than 25% of the lamps are electric, the incidence of the disease has decreased 15% in six years. In those mines where between 50% and 75% of the lamps are electric, the incidence has decreased 26%. The smaller decrease noted in those mines where 75% of the lamps were electric, is explained by the high initial incidence of the disease.

Dr. Haldane argues on sound ground in refuting the suggestion that miners' nystagmus is caused by mine gases. It is possible that alcohol may be a contributory cause, but the harm exercised by it is

secondary and superimposed on the primary cause. Dr. Rivers treats the subject from the psycho-neurotic point of view. This chapter may be dismissed with few words. It must be admitted that any serious condition, leading to a disturbance of vision and to the appearance of definite nervous symptoms, will be associated with changes in temperament or mental outlook. The mechanism of the nervous disturbance is obscure. In these circumstances it would be risky to dogmatize concerning the changes that may take place in the function of the nervous system as the organ of volition. On the other hand, it is quite speculative to endeavour to postulate a psychic basis of the affection and the assumption of an important anxiety neurosis as an essential element of the condition would be to confuse cause with effect. The psychical symptoms in men suffering from miners' nystagmus must be either manifestations of an inherent tendency or the results of the effects of the disease. Those who practise in mining districts, are recommended to procure a copy of the report and to study in it the clinical signs and symptoms and the methods of diagnosis.

#### REORGANIZATION OF THE DEFENCE MEDICAL SERVICES.

THE FEDERAL COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION IN AUSTRALASIA at its meeting held on February 9, 1922, resolved that the Prime Minister and the Ministers for the Navy and for Defence be informed that the Committee was in favour of the establishment of one medical service to supply the needs of the Navy, the Army and the Air Forces. Notwithstanding various reports that have been published in the daily press to the effect that the proposal has been considered and has not met with approval, a letter, dated August 8, 1922, has been received by the Honorary Secretary of the Federal Committee from the Secretary of the Prime Minister's Department, to the following effect. The Secretary has been directed to inform the Committee "that the Minister for Defence, on the recommendation of his naval and military advisers, has approved of the formation of a medical section at Defence Head-Quarters for the purpose of organizing the medical needs of the Navy, Army and Air Services." It will be noted that the approval refers to the formation of a section for organization purposes. Whether this should be regarded as meaning that the section would be a kind of committee whose reference would be to draw up a scheme of organization or that the section would be the administrative body of the medical service charged with supplying the medical needs of the three arms of the Defence Forces is not clear. The plan favoured by the Federal Committee on the ground of economy, increased efficiency and general expediency involves the amalgamation of the Naval Medical Service, the Army Medical Service and the Air Forces Medical Service. It is doubtful whether material advantages would accrue from the combination of the administrative bodies of the three existing medical services, unless the barriers between the services themselves were removed. It is a pity that the Government has not been more explicit.



## Abstracts from Current Medical Literature.

### PHYSIOLOGY.

#### Adrenals and Fatigue.

EXPERIMENTAL work of recent years has indicated that the adrenal medulla is not essential to life. Stewart and Rogoff have been unable to show that a reduction of the epinephrin output to one-third of the normal or less produces any difference in animals. F. A. HARTMAN, R. H. WAITE AND E. F. POWELL (*American Journal of Physiology*, April, 1922) have tested the ability to work and to withstand fatigue and in one instance the effect of pregnancy in animals with a reduced epinephrin output. One adrenal was removed and the other denervated and the animals (cats) looked after with great care. The denervated eye was used as a possible test for epinephrin in the work tests. The apparatus for fatiguing animals was a wooden treadmill turned by means of a crank at such a rate as to accommodate the animal. Normal cats usually show a dilatation of the denervated pupil accompanying work on the treadmill which begins within a few minutes and increases as the work progresses. Spurts of work are accompanied by greater increases in the dilatation. If dilatation is absent and the animal works hard, convulsions may follow, but they usually do not result if there is a good dilatation of the denervated pupil. The dilatation of the denervated pupil accompanying fatigue is absent in animals deprived of both adrenals or possessing but a single adrenal and that thoroughly denervated. Such dilatation is therefore probably caused by epinephrin. Certain cats possessing but a single adrenal and that denervated developed convulsions repeatedly in the treadmill. Preceding these convulsions dilatation of the denervated pupil was scanty or absent. In the cat which developed these convulsions most easily, they could be obtained with difficulty after regeneration of a large number of the nerve fibres to the adrenal judging from the denervated pupil reaction. At this time the animal could travel many times farther in the treadmill than before regeneration of the nerves. The authors conclude that epinephrin plays an important rôle in increasing muscular work and delaying the onset of fatigue.

#### Hydræmia and Secretion of Urine.

It is generally assumed by adherents of the modern theory of urinary secretion that the diuresis following the drinking of large quantities of water is due to a dilution of the blood. The decrease of the osmotic pressure of the blood plasma incident to the hydræmia, it is believed, favours filtration through the renal capsule. HARRY BAKWIN (*The American Journal of Physiology*, April, 1922) has studied

the relation between blood concentration and urine output in infants with diarrhoea on fluid treatment, as well as in normal infants. Normal male infants were given thirty to thirty-five cubic centimetres of fluid per kilogram of body weight and the urine collected for four hours. Blood samples for refractometric determination were taken immediately before and at frequent intervals after the fluid was drunk. Saline solution was given by gavage. In ten of the twelve experiments with water drinking there was a distinct hydræmia which started immediately after the water was drunk, reached its height in from thirty minutes to two hours and then gradually disappeared. In only one of the cases was there excessive secretion of urine. In the others the amount of urine voided during the four-hour period following the water drinking varied from 7% to 83% of the water drunk. In one experiment where the serum protein dropped from 8.43% to 6.8%, only 15% of the water drunk was excreted in the four-hour period. Seven experiments were conducted with saline solution gavage. Five of these showed distinct hydræmia; in three instances the hydræmia was preceded by a brief period in which the blood became concentrated. Following the administration of saline solution, there was a distinct oliguria. The largest amount of urine secreted in four hours was 16% of the fluid given. The author concludes that in infants hydræmia does not necessarily cause diuresis.

#### Salt and Water Elimination in Man.

M. M. BAIRD AND J. B. S. HALDANE (*Journal of Physiology*, May, 1922) have investigated the retention of water which occurs when it is taken after a strong salt solution. The salt ingested was either 38 grammes of sodium chloride, 29.25 grammes of sodium chloride with 12.6 grammes of sodium bicarbonate or a mixture in which potassium, calcium and magnesium were present in about the quantities found in plasma. Each of these doses represents the salts of about 4.5 litres of plasma. All three caused much the same flow of urine. The salt mixture was drunk in five hundred cubic centimetres of water; an amount of water varying up to 2.5 litres was then drunk, beginning three and a quarter hours after the first salt solution. So long as the total amount of water drunk was less than three litres, the rate of water excretion was entirely independent of the amount taken. Hourly hæmoglobin estimations were made and it was found that the hæmoglobin was invariably diluted by amounts varying between 6.5% and 14%. A certain amount of oedema often occurred. The authors believe that the facts can be explained on the following hypothesis. Excess water is mainly stored in the tissues along with far less water than is needed to dilute it to isotonicity. The process of storage is a slow one and, until it is accomplished, there is an excessive salt concentration in the blood. The first diuresis is due to surprise effect and comparable with alimentary gly-

cosuria. When, however, the majority of the salt has been stored, it is not readily liberated again into the blood and the effect of the ingestion of large quantities of water is partly a water diuresis and partly oedema of the depot tissues, whilst the excretion of salt is very slow.

#### Regurgitation of Intestinal Contents in Gastro-Enterostomy.

DIFFERENT investigators have in the past few years reported the finding of duodenal juices in the normal stomach, especially when the acidity was of a moderate degree. G. E. BURGET AND M. E. STEINBERG (*The American Journal of Physiology*, April, 1922) have made experiments on normal dogs, using a stomach tube for introducing the acid and aspirating samples and similar experiments on these animals after posterior gastro-enterostomy. By means of a stomach tube one hundred to one hundred and fifty cubic centimetres of a 0.5% solution of hydrochloric acid was introduced into the stomach. The dog was then allowed to walk about for a minute or two. A sample was then obtained by aspiration and titrated. The presence of water, if any, in the stomach was shown by this titration. A second sample was taken fifteen minutes after introduction of the acid, another in thirty minutes, etc., until the acidity was reduced to 0.1% to 0.2% or the stomach empty. In the normal dogs the acidity was reduced to 0.1% to 0.2% in seventy-five to ninety minutes. The alkaline juices of the duodenum were regularly regurgitated into the stomach within thirty-five to forty-five minutes after the introduction of the acid. In dogs with posterior gastro-enterostomy duodenal regurgitation took place within fifteen minutes and the acidity of the stomach contents was reduced to a percentage of 0.1 to 0.2 in thirty to forty-five minutes.

#### Voluntary Control of Sympathetic Nervous System.

N. B. TAYLOR (*American Journal of Physiology*, 1922, Volume LIX.) has investigated an individual who had a certain amount of voluntary control of his sympathetic nervous system. The subject of the investigation was a student of medicine, aged twenty-six, of robust physique and of a somewhat phlegmatic temperament. He was capable at a given sign of increasing immediately the rate of the heart from 70 to 125—an increase of 55 beats per minute. The acceleration could be maintained for several minutes and could be brought to an immediate termination at will. The acceleration was not preceded or accompanied by a self-induced emotional state, but was produced through a certain exercise of the will. The blood pressure was elevated, the systolic pressure rose from 118 to 150 millimetres of mercury during the paroxysm. Peripheral vasoconstriction was associated with the change in heart rate. Accompanying the cardiac and vascular changes were dilatation of the pupil, muscular

twitchings and a slight increase in the respiratory rate. Glycosuria invariably occurred after a series of paroxysms. In no case was any definite alteration in the blood sugar detected.

## BIOLOGICAL CHEMISTRY.

### The Vitamin of Milk.

T. B. OSBORNE AND L. B. MENDEL, with the help of H. C. CANNON (*Biochemical Journal*, February, 1922) have made some experiments on the amount of water-soluble vitamin present in cows' and human milk. The classic experiments of Gowland Hopkins indicated an unexpected effect upon health and growth secured by the addition of two cubic centimetres of cows' milk daily to a "synthetic diet" fed to rats. Later researches made it evident that the milk furnished a supply of what is now called water-soluble vitamin. Osborne and Mendel repeated these experiments on a number of occasions, but found that more milk, roughly sixteen cubic centimetres daily, was needed to produce normal growth of rats with American articles of food. Hopkins was able to confirm his results in England in 1920. He states that, out of twenty animals receiving two cubic centimetres daily of fresh cows' milk, not one failed to grow almost normally throughout the period of experiment. The authors have made further experiments, using a ration of casein (18%), starch (54%), butter fat (9%), lard (20%) and salt mixture (4%). Each rat received two cubic centimetres of milk separately each day. The milk contained two hundred and thirty thousand bacteria per cubic centimetre and was not pasteurized. After the rats had been fed for some months, forty milligrammes of yeast extract were added to the ration. The rate of growth rapidly increased. One rat died after forty days with symptoms of vitamin deficiency. The authors think it impossible that there is such a range of vitamin content in milk that these results are due to unsatisfactory milk. Some experiments with human milk showed that ten cubic centimetres daily were sufficient to promote normal growth in rats.

### Collodion Membranes.

J. M. LOONEY (*The Journal of Biological Chemistry*, January, 1922) describes new methods for preparing collodion membranes of varying permeability. The author claims that these membranes can be rolled up in a ball like a wad of tissue paper without being injured in the slightest, as is shown by the fact that when blown out and filled with a saturated solution of ammonium chloride they exhibit a high degree of endosmosis. A difference of level of 25 centimetres has been noted in a tube five millimetres in diameter after immersion in distilled water. This flexibility, which is present in the dried membranes, is obtained by adding ethyl acetate to the solutions of collodion in

alcohol and ether. The membranes are not kept in water and are allowed to dry before placing them in water. The membranes are formed quite simply by pouring the collodion solution into a test tube or flask and draining away the excess. The flasks are then allowed to dry completely. Not until the membrane is quite dry is it separated by a stream of water from the glass. The development of pinholes is the main defect. Their formation is avoided by scrupulous care in the cleansing of the flask and by allowing all particles in the solution of collodion to settle from the liquid. Maximal flexibility is obtained when the solution contains 40% of ethyl acetate.

### Effect of Severe Muscular Work.

J. A. CAMPBELL AND T. A. WEBSTER (*Biochemical Journal*, January, 1922) have made some observations on the composition of the urine in man after severe muscular work. The subject of the experiment was accustomed to do 40,000 kilograms on a bicycle ergometer in three hours and 67,500 kilograms in five hours with one hour of rest after three hours. He felt only slight fatigue. Previous studies had given the components of the urine under rest and under light work in the laboratory. The subject attempted to do 100,000 kilograms a day at the rate of 20,000 kilograms per hour for five days. On the first day he abandoned the attempt after two hours; on the second day he succeeded in doing 72,400 kilograms and on the third, fourth and fifth days completed the work. The analyses of the urine showed that the undetermined nitrogen, creatinine, neutral sulphur and lactic acid were increased. Acetone appeared in the urine on the third and fourth days. In the comparison of the day and night urine, acidity, ammonium and phosphates were higher at night; sulphur was evenly distributed; total nitrogen was higher during the day than at night.

### The Behaviour of Tethelin.

J. C. DRUMMOND AND R. K. CANNAN (*Biochemical Journal*, January, 1922) have made a study of tethelin and of its alleged effects upon growth. Tethelin was the name given by Brailsford Robertson to a substance isolated by him from the anterior lobe of the pituitary gland. It has been credited by its discoverer with action on growth, on the enlargement of tumours and the healing of wounds. The authors have made a chemical examination of several samples of material prepared as directed. They find that tethelin consists of an impure mixture of substances of the lipid class and that this mixture is readily separated into fractions of varying composition. The authors submitted the papers of Brailsford Robertson to Professor Karl Pearson and under the direction of the latter Mr. H. Soper prepared a report on the statistical methods. From this report it would appear that the curves failed to reproduce the characters of individual

growth. Finally, the authors submitted a group of mice to the action of tethelin. The growth of those mice to which the dried anterior lobe of the pituitary gland was fed, did not differ from that of the control group. The authors conclude that tethelin is no longer to be regarded as a definite entity and that it contains no substance with an active influence on body growth.

### Rickets and Vitamin A.

J. GOLDING, S. S. ZILVA, J. C. DRUMMOND AND K. H. HOPE (*Biochemical Journal*, March, 1922) have continued their studies on the feeding of pigs in relation to the causation of rickets. They have already shown that rickets is not produced in pigs by depriving them of vitamin A, soluble in fats. Such pigs do not thrive well, nor do they produce healthy young. Further experiments are now recorded in which the amount of calcium has been greatly reduced in addition to depriving the diet of vitamin A. Four groups of pigs have been used for experiment. Group I. received a ration deficient in vitamin A and in calcium; Group II. received a ration lacking in vitamin A; Group III. received a ration deficient in calcium; and Group IV. received a diet rich in calcium and vitamin A. Two pigs were used in each group. They were all from the same litter and were fed on sow's milk and wheat offal. The pigs were weaned when fifty-three days old. The basal experimental diet consisted of wheat offal and inactivated caseinogen. Cream and cod liver oil were given to supply vitamin A, while an equivalent amount of olive oil, lacking in vitamin A, was supplied to the other two groups. Calcium phosphate was added to increase the supply of calcium. The pigs were killed one hundred and forty-five days after the commencement of artificial feeding. The pigs of Group I. weighed about thirty-eight kilograms (eighty-three pounds); the pigs of Group II. weighed about forty-three kilograms (ninety-four pounds); the pigs of Group III. weighed about sixty-six kilograms (one hundred and forty-five pounds) and the pigs of Group IV. weighed about eighty-seven kilograms (one hundred and ninety-one pounds). The melting points of the fat from the pigs were, in Group I., 19° C.; in Group II., 19.3° C.; in Group III., 22° C.; and in Group IV., 22.5° C. The percentages of lime in the humerus, stated on dry matter, were, in Group I., 29.5%; in Group II., 29.1%; in Group III., 33.5%; and in Group IV., 38.1%. The bones were subjected to histological examination, but no evidence of rickets could be discovered. The examination *post mortem* revealed no abnormalities in any of the organs. The authors conclude that their experiments show that the pigs did not thrive well on diets deficient in lime and vitamin A, but that they did not suffer from rickets in the pathological sense. The condition of under nutrition may, however, have been loosely described as rickets by farmers.

## British Medical Association News.

### SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held at the Sydney Hospital on July 14, 1922, the President, Dr. T. W. LIPSCOMB, in the chair.

#### Papilloma of the Larynx.

Dr. H. SEAWARD MARSH showed a specimen of a papilloma of the larynx removed from an adult. The patient, a woman aged forty-eight years, had suffered from loss of voice for several years. On examination, Dr. Marsh had discovered a tumour growing from the left vocal cord close to the anterior commissure. This had been removed by him in October, 1921, under cocaine anaesthesia, by the indirect method with a laryngeal snare. A week later he had punched out the seat of origin with a punch forceps. So far no recurrence of the growth had occurred.

#### Foreign Bodies Removed from the Food Passages.

Dr. MARSH also showed the following foreign bodies which he had removed from the oesophagus: Five half-penny pieces, one penny, one shilling, a mutton bone, a wish-bone of a quail, a portion of a fowl's rib and a pin. He also showed a dental broach which he had removed from the right *pyriform fossa*. Most of these foreign bodies had been caught at the level of the cricoid cartilage with the edge facing the operator and had presented no difficulty in removal by Bruhning's apparatus. The penny had been impacted at the level of the cricoid cartilage and had been removed by a coin-catcher, as Bruhning's apparatus had slipped off. The mutton bone had penetrated the wall of the oesophagus and had set up inflammatory trouble with associated pyrexia. The patient had been treated for tonsillitis by a medical practitioner, but she had insisted that she had swallowed a foreign body. Dr. Marsh had removed the bone under local anaesthesia by Bruhning's apparatus. The dental broach had been removed under cocaine by the indirect method after Dr. Edwards had taken a skiagram.

#### Demonstration of Skiagrams.

Drs. J. G. AND W. A. EDWARDS showed an interesting series of skiagrams of pulmonary dust infections in lead and stone miners. These skiagrams showed various stages of the disease, both with and without super-added tuberculosis. They also showed skiagrams of gummatous osteitis of the skull affecting all the cranial bones and of an extensive sarcoma involving the upper third of the femur and pelvis.

#### Fracture of the Skull with Loss of Vision.

Dr. H. SKIPTON STACY showed a boy, aged fourteen years, who had been admitted to hospital on February 1, 1922, in an unconscious condition and with stertorous breathing. The patient had had a hematoma over the occipital region; crepitus had been elicited at this spot and blood-stained froth had issued from the mouth. He had been seen by Dr. Ramsay Sharp, who had held out very little hope of recovery. On the following day forty cubic centimetres of blood-stained fluid under positive pressure had been withdrawn by lumbar puncture. This had been repeated on the two following days. On the last occasion the fluid had been opalescent and not under increased pressure. The patient had gradually regained consciousness. On February 8, his pupils being widely dilated, it had become evident that he was blind. Dr. North had seen him in consultation and had reported that the fundi were normal except for a slight blurring on the nasal side of each disc. Dr. North had thought that this had probably been caused by a preceding oedema. On March 23 Dr. North had reported a general loss of vision, with no discoverable quadrant defects, but with reaction to both light and accommodation. He had thought that the lesion probably involved the occipital cortex on both sides. This view had coincided with Dr. Stacy's own opinion. About four weeks after the accident he had begun to recover some vision. It had gradually improved during the next few months

until he had been able to read a newspaper. Since that time (one month previous to the date of the meeting) the vision had remained *in statu quo*.

#### Osteo-Genesis Imperfecta with Multiple Fractures.

Dr. STACY also showed a boy, aged eleven years, who had been admitted to hospital on April 25 with a history of having fallen off a box forty-five centimetres (eighteen inches) high and having fractured the left femur. He had had twenty-one previous fractures of limbs. The patient had been born in London and had lived there for eighteen months. He had weighed four kilograms (nine pounds) at birth and had been breast-fed for seven months and then had been reared on cows' milk. Beyond the death of one sister from measles the family history was unimportant. On the voyage to Australia he had had measles and his parents said that he had not been the same boy since. He had not started to walk until after his third birthday and shortly after this the first fracture below the left knee had occurred. He had been able to walk after every subsequent fracture until three years ago and since that time, owing to mal-union of the fractures in the lower extremities he had had alternately to crawl and be wheeled about.

Dr. Stacy pointed out that the boy had the bluish sclerotics that were supposed by several authors to be characteristic of the disease and he thought that the youth of the patient was sufficient to exclude osteo-malacia from the diagnosis, because juvenile osteo-malacia was extremely rare. Multiple fractures were not a common feature of rickets and Dr. Stacy could not see any evidence of that disease, with the exception of a problematical beading of the ribs on one side. Dr. Hamilton Marshall had seen the patient in consultation and had been able to find no trace whatever of rickets. Dr. Edwards, who had radiographed the whole osseous system, had reported that there was a condition of *osteo-genesis imperfecta*.

Dr. Stacy said that, according to Whitman, *osteo-genesis imperfecta* or *fragilitas osseum* was of congenital origin; the epiphyseal cartilages appeared to be normal, but the periosteal growth of bone was sufficient. The bone was soft, cartilaginous in parts and the periosteal fissure extended into its substance. Fractures were attended with little pain, united slowly with small callus formation and it was practically impossible to prevent a certain amount of deformity. With advancing years the tendency to fracture might diminish. Medication was of little value.

Dr. Stacy further pointed out that an interesting feature of the case was that all the fractures had been confined to the upper and lower extremities and that deformity had only resulted in the lower or weight-bearing limbs. The fracture for which he had been admitted to hospital, had united in good alignment, but had not yet borne any weight. Dr. Wardlaw had estimated the amount of calcium in the blood and had found it to be three milligrammes per hundred cubic centimetres, the normal being five milligrammes. At the time of demonstration he was taking calcium lactate and had previously been given thyroloid extract. Time alone would show what the result would be.

#### A Suppurative Arthritis of the Knee Joint.

Dr. STACY also showed a boy, aged fourteen years, who had been admitted to hospital on March 27, 1922, with a history of having tripped on the stairs five days previously without striking the knee. On admission the right knee had been swollen and tender with much fluid in the joint. The X-ray report had stated that there was a chip off the lower end of the patella. The temperature had been 39.4° C. (103° F.) and the leucocyte count 14,800 with 83% of polymorpho-nuclear cells. The leg had been put on a back splint and the knee fomented. As no improvement had occurred, on March 30 the knee joint had been aspirated and sixty cubic centimetres (two fluid ounces) of purulent fluid withdrawn. This has been found to contain *Staphylococcus albus*. Next day a further sixty cubic centimetres of purulent fluid had been withdrawn and the joint had been washed out with normal saline solution. The limb had then been placed in a Thomas's bed-knee splint with a strapping extension. The operation had been repeated on three more occasions, the saline solution being replaced by four or eight cubic centimetres of a 2% solution of formalin in glycerine. On April 6 the temperature had



been 38.3° C. (101° F.) and the leucocyte count had fallen to 10,800, with 67% of polymorpho-nuclear cells. The knee had become gradually less painful and swollen, with the result that on April 27 the splint had been removed and massage commenced. It had been necessary to suspend the massage temporarily six days later, owing to redness and swelling. On May 8 he had been allowed to get up and gently passive movement had been undertaken. On May 29 he had been discharged from hospital feeling well, with practically no swelling of the joint and with gradual return of movement. Since that date he had had hot air applications and passive movement with the result that at the time of demonstration the knee had a normal appearance with a range of flexion of thirty-five to forty-five degrees. Dr. Stacy felt confident that with the continuance of passive movement the patient would regain the full extent of flexion. He was doubtful, however, whether a similar favourable result could be obtained with this treatment in the case of infection due to *Streptococcus*, *Staphylococcus aureus* or other organisms.

#### Tuberculosis Verrucosa.

DR. G. R. HAMILTON showed a man, seventy-one years of age, who had been operated on thirty-five years previously for *fistula in ano*. The fistula had not healed and the patient had carried on his usual occupation, which necessitated much riding on horseback. The patient had suffered from a tuberculous infection and a warty indolent lesion had appeared at the anal margin. This had spread on to the fold of the buttock and had attained its present relatively large size. The condition had been diagnosed as *tuberculosis verrucosa*.

#### Wax Tumour of the Face.

DR. HAMILTON also showed a woman, sixty-five years of age, who twenty years previously had kept a boarding house. At that time she had had in the house a woman who was a "beauty specialist" and who had operated on this patient by injecting under the skin of her face some paraffin to fill out wrinkles. The patient had been then forty-five years of age and she stated that after these injections she had looked like sixteen. Since that time the wax had slipped in places and could be felt as separate tumours. It gave the patient an appearance not unlike that of the "leonine" face.

#### Multiple Rodent Ulcers.

DR. HAMILTON also showed a man, sixty years of age, a plasterer by trade, who had multiple rodent ulcers of the face and abdomen.

#### Malignant Disease of the Rectum.

DR. HOWARD BULLOCK showed a patient on whom he had performed the operation of salpingo-oophorectomy and abdomino-perineal excision of the rectum in one stage (see page 301).

#### Senile-Hypertrophy of the Prostate.

DR. BULLOCK also showed three men from whom he had removed the prostate for senile hypertrophy. Two of these patients, who had suffered acutely from their disability, had come from the out-patient department and the third had been admitted with acute retention of urine. In all three a preliminary cystostomy had been first carried out under local anaesthesia. The bladder had been drained for three weeks or more before they had been considered well enough to withstand further operation. A general anaesthetic had been given to two of the patients and the prostates removed. The third patient had suffered from bronchitis and myocardial degeneration and his condition had contra-indicated the administration of a general anaesthetic. It had been necessary to nurse him in a sitting posture and Dr. Bullock had removed the prostate after injecting a solution of stovaine and glucose into the *theca spinalis*. Dr. Bullock stated that the results obtained in these three patients, who were undoubtedly bad subjects for operation, emphasized several facts. In the first place it was clear that age and general debility should be no bar to operation when this alone held out any prospect of relief. Secondly it was wisest in certain cases to use the two-stage operation and lastly in a chosen few operation by

local infiltration and spinal anaesthesia combined was the only method of allowing any margin of safety to the patient. These patients had had temperatures varying from 37.3° C. to 38.3° C. (100° F. to 101° F.) on admission to hospital and their ages had ranged from seventy to seventy-three years.

#### Treatment of Gastric Ulcer.

DR. J. MACDONALD GILL discussed the treatment of gastric ulcer by means of atropine. He said that, except in small doses, atropine, as far as he knew, had not been used extensively in Australia for the treatment of gastric ulcers. Opinion in Europe and in America seemed to be divided on the subject and on the whole was hostile. He had been led to use it eighteen months previously by consideration of the fact that the vagus was the motor nerve of the stomach and that atropine was a drug which paralysed the muscular tissues supplied by the vagus. He had been astonished at the relief the drug gave and used it systematically in all cases of gastric ulcer. He found that in a few days pain and vomiting, if present, disappeared and the patient became comfortable. He continued the treatment as a rule for four or five weeks and by that time the patient was generally able to take full diet. Although pain subsided after two or three days of administration, it recurred at once when the use of the drug was suspended. Pain ceased altogether if the drug were given continuously for three or four weeks and this fact suggested that the pain in gastric ulcer was due to severe contractions of the muscle. Vomiting was not checked as quickly as pain, but the drug was effective in the long run, both in vomiting due to gastric ulcer and in that due to other causes. In cases of haemorrhage the use of atropine was beneficial, provided that the bleeding did not occur from a large artery.

Dr. Gill further stated that it was essential to give large doses. He generally gave 0.8 milligramme (one-seventy-fifth of a grain) of atropine sulphate every four hours. He sometimes gave more, but never exceeded six milligrammes (one-tenth of a grain) in twenty-four hours. Toxic effects generally occurred in about twenty-four hours or longer. The pupils became dilated and the patient complained of not being able to read. Dr. Gill as a rule disregarded this, as it was an indication that an adequate dose was being given. Sometimes delirium occurred and then administration should be stopped for forty-eight hours. It could then be given again in the same doses. It was seldom necessary to discontinue the drug a second time. The treatment should be continued for four or five weeks. By this time the patient was generally free from pain and could take full diet. Treatment should be carried out in hospital, if possible, for two reasons; firstly, on account of the possible occurrence of delirium and, secondly, on account of the necessity of giving the injections regularly and without interruption. After discharge from hospital the patient should be warned that the pain and other symptoms might recur. Complete relief could be obtained by taking an adequate dose of atropine by the mouth now and again. Burroughs Wellcome & Company's tablets were very convenient for this purpose. A dose of one milligramme (one-sixtieth of a grain) was usually sufficient and was not likely to cause any disturbance of vision if only taken now and then. It was, of course, necessary to be careful with the diet.

#### Gas Gangrene of the Arm.

DR. GEORGE BELL, O.B.E., showed a man, aged fifty-six years, a labourer, who had been admitted to hospital on April 6, 1922, after having had his left arm almost completely severed in the lower third by the wheels of several trucks which had passed over him at Darling Island. Under gas and oxygen anaesthesia amputation had been performed at the junction of the middle and upper thirds about three hours after the injury. The wound had been closed and a drainage tube inserted. At 8 a.m. on April 8 the stump had presented the usual signs of gas gangrene as seen on the western front during the war, namely, excessive swelling, brownish discoloration of the skin and a thin, fetid discharge. After removal of the sutures numerous bubbles of gas had escaped from among the muscles. Dr. Keith Inglis had examined the discharge and had reported that the infecting organism had been *Bacillus*

*aerogenes capsulatus*. The stump had been examined under gas and oxygen anæsthesia and it had been found that the whole of the proximal portions of the *biceps* and *coracobrachialis* muscles had been gangrenous. Dr. Bell had excised these muscles and also about two and a half centimetres (one inch) of the *triceps* muscle, which had only been infected superficially. He had left the wound widely open and exposed to the air with a thin layer of gauze soaked in eusol as a dressing. Subsequently eusol and hydrogen peroxide had been applied alternately and frequently through Carrel's tubes. On April 21 the pathological department had reported sixty organisms (staphylococci) to the field. On April 24 a modified "secondary suture" had been performed. Another two and a half centimetres (one inch) of bone had been removed and the wound partially closed with silk-worm gut sutures. Carrel tubes had been again inserted. No "flaring" of the wound had occurred and within a few days the sutures had been tightened. The wound had finally healed on May 18.

Dr. Bell stated that in his experience gas gangrene of the shoulder had always been a very fatal infection. He could not remember recovery occurring in the case of a patient thus affected. No doubt the early recognition and treatment of the condition had favoured recovery and the secondary suture had shortened convalescence.

#### Acute Hæmorrhagic Pancreatitis.

DR. BELL also showed a woman, aged twenty-nine years, a barmaid, who had been taken ill at 8 p.m. on May 5, 1922, with severe abdominal pain and had vomited at intervals during the night. The bowels had acted on May 5, but not after the commencement of the pains. She had been seen by a doctor at about 7 a.m. on May 4 and during the day had had five enemata administered to her by a competent nurse, but without result. The patient had been admitted to Sydney Hospital at midnight on May 4 with a provisional diagnosis of intestinal obstruction. There had been moderate abdominal distension, with acute tenderness on pressure in the vicinity of the umbilicus. No jaundice had been present. Laparotomy had been subsequently performed at 1 a.m. on May 5, a median sub-umbilical incision being used. This had subsequently extended above and to the left of the umbilicus. A large amount of blood-stained peritoneal fluid had been found. The ascending and transverse colon had been greatly distended. Small areas of fat necrosis had been seen, particularly about the attached border of the transverse mesocolon. The fat of the great omentum had been of increased density and had appeared to be much firmer than normal fat. The pancreas had been greatly swollen and hard and there had been some hæmorrhage under the peritoneum of the posterior wall of the lesser sac in the vicinity of the pancreas. One much larger area of fat necrosis had been noted here. The gall bladder had been slightly distended, but had not been drained. The peritoneum over the anterior surface of the pancreas had been incised and a large drainage tube inserted into the substance of its body. Two drainage tubes had been placed in each lumbar region. A thin, serous fluid had drained from these tubes on May 6 and the patient had been discharged from hospital on June 7. Sugar had not been found in the urine at any stage of the disease.

On May 8 Dr. Wardlaw had examined the fluid taken from the peritoneal cavity and had reported the absence of trypsin and sugar and the presence of blood and protein in large quantities. On May 6 a specimen of fæces had been examined and the unabsorbed fat had appeared to be greater in amount than in a previous specimen examined, while undigested muscle fibres had been present.

Dr. Bell said that the outstanding features, in addition to those usually described, had been the great distension of the ascending and transverse colon and the peculiar firmness of the fat of the great omentum. He suggested that this might have been due to some pre-necrotic changes in the fat. He had seen a fatal case of acute hæmorrhagic pancreatitis in which the onset had taken place six weeks after the performance of a cholecystostomy operation with the fistula still patent. This case had proved rapidly fatal. In the case reported the gall bladder, though distended, had not been drained. He attached more importance to the free drainage and relief of tension in the pancreas.

#### Myositis Traumatica Ossificans.

DR. BELL's third patient was a youth, aged sixteen years, who had been admitted to hospital on March 12 suffering from fractures of the right scapula and clavicle subsequent to an accident two days previously, when he had been caught by the right hand in a rotary machine known as a "whizzer," used in the manufacture of felt hats. He had been swung round and dashed against a wall. A large hæmatoma of the axilla, shoulder and lower cervical regions had been present. For one week subsequent to admission he had had pyrexia, with a temperature up to 38.3° C. (101° F.). A recent X-ray examination had shown that there was ossification of the tendon of the *pectoralis major* muscle and of a portion of the deltoid. There was also a linear deposit of osseous tissue which corresponded to portion of the *coraco-brachialis* muscle.

#### Osteo-Genesis Imperfecta.

DR. BELL also showed a youth, aged fourteen years, who had been admitted to hospital on May 5, 1921, suffering from a fracture of the upper third of the right femur. He had slipped while walking and the leg had become twisted under him and had caused a fracture. The family history showed that an elder brother had a very deformed chest and that an infant brother suffered from congenital heart disease, probably a patent *foramen ovale*. The patient possessed intelligence above the average and his teacher had stated that he was "most intelligent, diligent and well conducted." The mother stated that she had noticed that when he was a child the bones of his head had been very soft and that the bones of the head had overlapped if only slight pressure were applied. He had always been able to bend his neck more easily than a normal child. The left femur had been fractured at the age of two years and again at the age of ten. Union had taken place on each occasion with but little deformity. The right femur had been broken four times, the first fracture having occurred at the age of four years. On one occasion the fracture had been plated with a Lane's plate, but the result had not been good. The mother had stated that a definite projection outwards had existed prior to the last fracture. An X-ray examination soon after admission to hospital had revealed a fracture through the site of this angular deformity, about five centimetres below the great trochanter. The angle formed by the shaft and the neck of the femur had been more obtuse than normal (*coxa valga*). The patient's head was above the average size. The blood serum had not reacted to the Wassermann test. The fracture had been treated with extension and a Thomas's knee splint and both lower limbs had been kept in a position of extreme abduction. On July 4, 1921, there had been some evidence of union and on August 4, 1921, there had been good union, with a certain amount of angular deformity. On October 6, 1921, the patient had walked with a caliper splint. During his stay in hospital the patient had been given thyroid and parathyroid extract and a mixture of *syrupus ferri iodidi* and cod liver oil. An X-ray examination on July 13, 1922, showed firm, bony union. The stræ in the bone in the neighbourhood of the fracture were very distinct. At the time of demonstration there was shortening of the right lower limb to the extent of 6 to 7.5 centimetres (two and a half to three inches) and the patient walked well on a boot fitted with a patten.

Dr. Bell said that the frequent occurrence of fractures in infancy and childhood which united, and the absence of other signs of osseous disease, either on clinical examination or on examination with the X-rays, indicated that this was a case of *osteo-genesis imperfecta*.

#### Osteo-Malacia.

DR. C. E. CORLETTE showed a number of skiagrams taken from a patient who was suffering from osteo-malacia. He said that osteo-malacia was endemic in certain regions and in some of these it was quite common. In Banjeluka, a town in Bosnia, lying in a river valley, there was supposed to be a population of about 14,000. One practitioner had recorded that in ten years amongst about 20,000 sick persons from this community he had seen as many as 3,500 patients suffering from osteo-malacia. Osteo-malacia had always been to some extent endemic in Vienna, but the

disease was now more frequent in that city and in the Tyrol under conditions of defective nutrition. This condition had sometimes been described as a special disease under the name of "famine osteo-malacia" or "famine osteopathy." The patient from whom the skiagrams exhibited had been taken, was a young female who was practically a food crank. She had refused for many years to eat either green vegetables, meat or milk and had lived almost entirely on bread, with very little butter. The condition which she manifested, could certainly be classed as "famine osteo-malacia." After three years of severe pain, described as rheumatism, often so severe as to lay her up, the right femur had broken while she was walking up stairs. Later on other fractures had occurred while she was lying in bed in hospital. These had included, amongst others, fracture of the left and a new fracture of the right femur, one with a bending of the unbroken bone. None of these fractures had shown the least tendency to throw out callus or to unite. The patient had suffered a good deal of pain and was greatly emaciated, in spite of liberal feeding. Examination of the skiagrams showed that the bones of the skeleton were decalcified and caused very little more shadow than the soft tissues. The medullary portion of the long bones seemed to have been expanded at the expense of the cortical portion, so that there was scarcely more than a faint line remaining.

Dr. Corlette had seen one other case of osteo-malacia. This had occurred in a young man from the New Hebrides. He had given a history of having lived on tinned foods and of agonizing pains in the limbs. This pain had been present for five years and had been very severe, even when jarring the limb, as when treading on a pebble. The bones had been enlarged and tender on pressure, but no fractures had occurred. The bone disease in a child, shown that night by Dr. Stacy, as probably a case of *osteo-genesis imperfecta*, seemed to him to be also a case of osteo-malacia. If the X-ray appearances of the bones of Dr. Stacy's patient were compared with those of his patient, they would be seen to exhibit the closest resemblance. The X-ray appearances of the bones of another child, shown by Dr. Bell, a child who had fracture after fracture in various bones, were quite dissimilar. The curves in this instance were due to his past fractures and not to bending. The disease in this child corresponded to Dr. Corlette's idea of osteo-psathyrosis or, as it was also called, *osteo-genesis imperfecta*. Osteo-malacia was not uncommon in cows in parts of the coastal regions of New South Wales and it occurred in many other animals. He had devoted a good deal of study to the subject and had become quite convinced that the disease in animals and man was identical.

Dr. Corlette also stated that there was apparently a link between pathological states of the parathyroid glands and osteo-malacia and also between that condition and dietary deficiency. In eight consecutive cases of osteo-malacia Erdheim had found some abnormality of one or more parathyroid glands in every instance. As far as his own studies went, the dietary deficiency seemed to be at least in part a deficiency in the fat-soluble vitamin. He had placed his patient on a corrected dietary, well supplied with the fat-soluble food factor, and he had also implanted into her axillæ the two parathyroid glands removed soon after death from a child who had died of cerebral tumour. The blood of each had been previously classified and had been found to belong to Group IV. No benefit had followed the operation. Homoplastic implantation of parathyroid gland, that is, grafts from one individual of the same species into another, had been done hundreds of times without a single success. Autoplastic grafts, or the grafting of a gland into a new position of the same individual, had been done successfully. As his grafting had been homoplastic, it had not been very likely that it would succeed.

#### Appendicostomy.

DR. CORLETTE also showed a man on whom he had performed an appendicostomy operation six months previously. The patient had been suffering from what had been found at the time of operation to be chronic ulcerative colitis. A previous diagnosis of malignant disease had been thought possible. No amœbæ had been discovered in the stools and treatment by emetine had brought about no improvement, nor had any of the organisms associated with bacil-

lary dysentery been isolated, although sought on several occasions. After formation of the appendicostomy fistula, irrigation of the colon had been practised, plain water generally being used. The patient at the time of operation had seemed to be moribund and was now heavier than he had been at any previous time and was working efficiently at his occupation. The wound had not leaked nor caused any discomfort. It was intended to keep the fistula open for at least two years for the purpose of daily irrigation. The patient performed the irrigations himself. This means of dealing with the colon was much less dangerous than the much-talked-of colectomy.

#### Surgical Apparatus.

DR. CORLETTE also demonstrated some improved surgical apparatus and indicated the method of their application. Amongst those demonstrated were a new overhead frame rendering abduction of the lower limb easy and simple, a new adjustable splint for the lower limb, based on Hodgkin's principle, an instrument for reduction of obstinate Colles's fracture, etc., a spring caliper extension appliance for Pott's fracture and a fender for use in cautery operation for hæmorrhoids.

#### Multiple Hydatid Cysts.

DR. W. A. RAMSAY SHARP showed a man who suffered from multiple hydatid cysts of the peritoneum and liver. When first seen in 1915 this patient had been much emaciated, but barrel-shaped, and had weighed eighty-nine kilograms (fourteen stone). His symptoms had been chiefly those of intra-abdominal pressure. Six months previously an exploratory laparotomy had been done and the condition had been so extensive that on careful consideration nothing further had been done. A diagnosis of liver and peritoneal hydatid had been made after consultation with Dr. Corlette and it had been decided to operate. His general condition had been so bad that if operation had failed, death would probably not have been hastened. On opening the peritoneal cavity literally thousands of cysts had been discovered in the peritoneal tissues. Although the majority had been very small, they had varied in size up to that of a child's head. A few had been completely enucleated. It had only been possible to open others. Their contents had been removed, the sacs had been swabbed out with formalin and saline solution and then dropped back into the abdomen. For these no drainage had been used. A large cyst in the right lobe of the liver had been opened after removing portion of a rib and drained in the usual way. Recovery had been slow, but uneventful, and the patient had been able to resume his work as a coach-painter. In 1919 this patient had again presented himself and a similar operation had been undertaken to relieve his abdominal distension. As many cysts as possible had been dealt with by opening and swabbing with formalin. No drainage had been used. There had been great difficulty of approach, owing to the mass of adhesions between coils of intestine and the abdominal wall and Dr. Sharp said that it was interesting to note that the patient had had none of the pain so often thought to be due to intra-abdominal adhesions, nor had he had any obstructive symptoms. At the time of demonstration the patient was again complaining of pressure symptoms due to growth of cysts. It was proposed to perform a third operation. Dr. Sharp pointed out that the operations already performed had given this patient seven working years and he had the prospect of many more.

#### Hydatid of the Lung.

DR. SHARP also showed a patient who had been operated on for hydatid of the lung. The history of this patient will be published in full in a subsequent issue.

#### Pseudo-Hermaphroditism.

DR. SHARP'S third patient was a child, aged twenty months, who was considered to be a male. The penis was well developed, in the position of the clitoris, but was bound down ventrally. A well developed *labium majus* was present on either side of a cleft which opened into a small passage in the position of the vagina and which admitted a probe for a distance of two and a half centimetres (one inch). Rectal examination had failed to disclose the presence of any body that might be regarded as a uterus or a uterine appendage. In each *labium majus*



was a body which was well developed and resembled a testis and cord. Dr. Sharp proposed to obliterate the pseudo-vaginal passage, free the penis and join the pseudolabia in a median raphe.

#### Colloid Degeneration.

DR. LANGLOH P. JOHNSTON showed a man, aged forty years, a builder, who had come to Sydney Hospital some years previously with papules of transparent yellow colour on the hands, cheeks, forehead and ears. The condition was a rare one and on microscopical examination showed colloid degeneration of the connective tissue of the cutis.

#### Linear Nævus.

DR. JOHNSTON also showed a girl, aged seven years, on whose right arm were to be seen lines composed of flesh-coloured, warty elevations with scales following the course of the ulnar and radial nerves. The individual lesions consisted of thickening of the prickle layer and hyperkeratosis with hypertrophy of the papillary layer. The condition had been present since birth.

#### Avulsion of the Ulnar Nerve.

DR. ARCHIE ASPINALL showed a patient who had fallen with his elbow on the top of a tap on September 27, 1921. The upright portion of the tap had entered the tissues at the elbow joint and the ulnar nerve had been ruptured and pulled out of its position for twelve and a half centimetres (five inches) of its length. Dr. Aspinall had exposed the course of the nerve and had joined it to its distal fragment, using silk for the nerve sheath and chromicized catgut for the nerve itself. On October 24 treatment had been commenced at the massage department. There had been no response to galvanism or faradism. On December 16 slight recovery of tactile sensation had been noted. On February 10, 1922, tactile sensation had improved. On March 10 sense of passive position had been present, but there had been no response to the Bristow coil. Return of response to galvanism had occurred on April 7; anodal closing contraction had occurred first and then kathodal closing contraction. The return had first been noted in the *abductor digiti quinti* muscle and next in the third and fourth dorsal interossei muscles. Anodal closing contraction was greater than kathodal closing contraction. On May 5 all the muscles responded to galvanism except the *opponens* and short flexor of the fifth finger. At the time of demonstration no response had occurred to faradism in any of the intrinsic muscles supplied by the ulnar nerve. With galvanism, however, the anodal closing contraction and the kathodal closing contraction were more nearly equal than before. There was a high, but definite, increase with the anodal current.

#### Plastic Operation on the Face.

DR. ASPINALL also showed a patient, a man of sixty years of age, who had been operated on by Sir Herbert Maitland six months previously for an extensive malignant tumour of the tongue and jaw. Half the lower jaw bone had been removed and a fistula had formed from the cheek into the mouth. The opening was about two and a half centimetres (one inch) in diameter and saliva had continually run out on to his neck. Dr. Aspinall had closed this by a tube graft from the back of the neck. The tube was still in position.

#### Severe Trauma to Face.

DR. ASPINALL also detailed the history of severe trauma in which the bones of a patient's face were completely separated from those of his cranium. The full notes of this case will be published in a subsequent issue.

#### Congenital Pes Valgus.

DR. R. H. BRIDGE showed two patients suffering from congenital *pes valgus* and said that mild types of this deformity were common and usually rectified themselves as the child grew older. The more advanced types required treatment to prevent the unsightly deformity of an abducted and flat foot. The patients shown were suffering from pure *pes valgus*, no *calcaneus* being present. There was abduction at the mid-tarsal joint. The navicular and head of the astragalus made a prominence on the inner border of the foot. Opinions differed as to the cause of the condition. At first there was no organic fixity. There seemed to be an incoordination between the abductors and the adductors of the foot. Organic changes occurred later on if the condition were neglected, but in the early

months of life the deformity could quite readily be corrected. Corrective manipulation twice daily would cure the mild cases. If the condition were neglected, manipulation, the use of plaster and the application of a metal splint were necessary.

#### Stricture of the Ureter.

DR. BRIDGE also showed a female patient who had been treated at various times over a period of eight months for chronic pyelitis. The treatment had been attended with but little success. Rest in bed with large doses of alkalies had improved her condition, but she had always relapsed on resuming active life. When Dr. Bridge had first seen her there had been tenderness over the right kidney and along the course of the right ureter. She had been suffering from some frequency of micturition and had had frequent attacks of pain in the right kidney region, apparently due to distension of the pelvis of that organ. The urine had been acid and had contained much pus. An X-ray examination of both urinary tracts had failed to disclose the presence of a calculus. Cystoscopic examination had shown a normal efflux from the left ureter. The urine coming from the right ureteric orifice had been visibly purulent. There had been definite obstruction to the ureteral catheter at the brim of the pelvis. A ureteropyelogram had been taken after the injection of a 25% solution of sodium bromide. A stricture of the ureter at the brim of the bony pelvis had been discovered, together with a dilatation of the pelvis of the kidney and of the ureter above the stricture. With a Braasch direct-vision cystoscope the stricture had been dilated at weekly intervals. Definite improvement had taken place after the second dilatation. After the fourth dilatation the urine had been quite free of pus and all pain and frequency of micturition had disappeared. No anæsthetic had been used. The improvement had been maintained for six weeks after the last dilatation and the patient had returned to her home.

Dr. Bridge said that cases of this sort were interesting and not uncommon. They often followed an attack of so-called acute pyelitis. Localized patches of ureteritis occurred in this disease. They were analogous to the localized patches of urethritis in gonorrhœa, which were the beginning of clinical stricture of the urethra. They were responsible in some instances for the pyelitis becoming chronic, because they impaired the drainage from the kidney. Dilatation of the stricture was essential and often the only treatment necessary. A good pyelogram taken with the proper technique was an invaluable aid in diagnosis.

#### Actinomycosis of the Jaw.

DR. BRIDGE's last patient was a woman who had been admitted to hospital about eight months previously with an extensive swelling of the lower jaw on the left side. She had given a history of sudden onset six weeks previously after an attack of toothache. The swelling had become extensive in five or six days. After admission an incision had been made into a soft spot at the angle of the jaw; a small amount of pus had escaped. One week later two other areas of softening had been noticed over the mandible. The patient had had no fever and had complained of very little pain. The ray fungus had been detected in the pus. After curetting freely all the granulation tissue, the patient had been treated with large doses of potassium iodide (two grammes, or thirty grains, having been given three times daily). Improvement had been rapid; after six weeks merely a small sinus had remained and this had subsequently healed. The patient had disappeared and when sent for to be shown at the clinical evening the condition of relapse demonstrated by Dr. Bridge had been discovered. The patient had had no treatment in the interval. She had refused another operation and was being treated with iodide of potassium. It had been impossible to trace the source of infection.

#### Banti's Disease.

DR. HAROLD RITCHIE, with SIR HERBERT MAITLAND, showed a man, aged thirty-four years, who had been admitted to hospital suffering from an enlargement of the spleen. He had also had a secondary anæmia. Sir Herbert Maitland had removed the spleen four months previously. Subsequent to the operation gradual improvement in the blood had occurred, with peculiar variations in the number of

white cells. At the time of demonstration the blood count was normal.

#### Lethargic Encephalitis.

DR. RITCHIE also showed a woman, aged twenty-two years, who had recently recovered from an attack of lethargic encephalitis. She suffered from persistent drowsiness and progressive obesity. There was also a diminished sugar tolerance, indicating involvement of the anterior lobe of the pituitary gland. The patient had slight tremor, spasticity and a mask-like facies suggesting persistent *globus pallidus* syndrome.

#### Splint Work.

DR. S. H. SCUGALL gave an interesting demonstration of celluloid and casein splint work.

#### Non-Obstructive Congenital Jaundice and Splenomegaly.

DR. LESLIE W. DUNLOP showed a patient suffering from a condition diagnosed as non-obstructive congenital jaundice and splenomegaly (see page 300).

#### Pathological Specimens.

DR. KEITH INGLIS demonstrated a very interesting series of pathological specimens.

A MEETING of the Victorian Branch of the British Medical Association was held at the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne Hospital, on August 2, 1922, MR. G. A. SYME in the chair.

MR. SYME apologized for the absence through ill-health of the President. DR. JOHN GORDON.

#### Hydatid Cysts in the Pelvis.

MR. F. D. BIRD read a paper entitled "A Note on a Form of Pelvic Hydatid Cyst" (see page 289).

MR. G. A. SYME, in opening the discussion, said that he had been particularly interested in Mr. Bird's paper, as he had recently been called upon to treat a patient in whom the condition was like that considered by Mr. Bird. The subject of lowly placed pelvic hydatids had been discussed at the Australasian Medical Congress held in Brisbane in 1899, on which occasion a paper had been contributed by Dr. Wm. Moore. Dr. Moore had advocated that approach to the cyst should be made through the peritoneum. He had emphasized the advantage to be gained by the use of the high Trendelenburg position; after evacuation of the mother cyst and its contents the adventitia might be sutured as in Bond's method or left open as in that of Russell and the abdominal incision closed. Dr. Moore had discussed the alternative perineal incision and had considered that the perineal route was to be chosen when there were indications that the cyst was suppurating because of the better drainage it provided.

MR. BIRD had described his method of attack through the bladder and from the successful issue in those instances in which Mr. Bird had employed it, this path of approach merited serious consideration.

MR. SYME detailed the case of a man, aged fifty-four, affected with a suppurating pelvic hydatid. The first symptom was a sudden retention of urine, although upon inquiry it was elicited that there had been difficulty attending the act of micturition for some months. The urine had been drawn off and subsequently the patient had been able to empty the bladder, though with difficulty. Rectal examination had disclosed a swelling in the region of the prostate extending laterally on both sides of the pelvis; its general character had suggested the possibility of hydatid disease.

Suprapubic cystotomy had been performed, but it had been difficult to elucidate the exact nature of the pathological condition, as all that had been evident was the presence of a large swelling displacing the bladder upwards and forwards. An incision had then been made in the perineum and an attempt made to investigate the nature of the tumour by exploration with a trochar and cannula, but no fluid had been evacuated. Eventually a little jelly-like material had been found in the cannula of such a nature as to suggest that they were dealing with a myxo-sarcoma or some colloid degeneration. The bladder had been closed, drainage had been established through the perineum and the patient for the time had appeared well. At the end of one month he had returned, complaining of

great frequency of micturition; the urine had been very dirty and offensive and had been found to contain hydatid cysts and a great deal of pus.

In the presence of a suppurating hydatid cyst in the situation he had indicated, he had chosen the perineal method of approach and had opened the former incision. A loculated cavity densely packed with degenerated daughter cysts had been evacuated and provision made for drainage through the perineum. The second operation had been carried out at the end of March, 1922, and the patient had made a good recovery, although the wound was still discharging and pus and occasionally shreds of hydatid membrane could be washed out.

In a consideration of the relative merits of the trans-vesical, peritoneal and perineal operations, Mr. Syme said that in the last mentioned there was a risk of damaging the urethra, as pointed out by Dr. Moore. In the course of the case he had just described some escape of urine had occurred.

Hitherto he (Mr. Syme) had chosen the intra-abdominal operation in dealing with non-suppurating pelvic hydatids, allowing the cyst to drop back after extracting the mother cyst and its contents and closing the abdomen.

It would be remembered that when Bond, of Leicester, described in 1891 his method of treating hydatid cysts, he had applied it particularly to pelvic and omental cysts. In 1895 Mr. Hamilton Russell advised that the cyst in all situations be dropped back without suturing after it had been emptied of its contents and that the abdomen should be closed.

MR. SYME concluded with an anecdote relating to the first example of a pelvic hydatid cyst he had seen. At the time he was student at the Melbourne Hospital and the patient was under the care of the late Mr. James. The patient in this instance sought treatment on account of retention of urine. After catheterization a swelling in the pelvis extending into the right iliac region could be palpated by rectal examination. Mr. James proposed to aspirate the swelling, but it so happened that the aspirator was out of order and in the meantime the cyst broke under manipulation. The result was the passage of a considerable quantity of clear hydatid fluid *per urethram*. The patient returned later, when the swelling had recurred and the cyst was aspirated, as was the practice at that time.

MR. R. HAMILTON RUSSELL suggested that in considering the three methods mentioned for dealing with hydatid cysts in the situation described by Mr. Bird, the vesical, the peritoneal and the perineal, it might be well to bear in mind a combination of the first two. He saw no objection to opening the bladder widely if such procedure was of advantage in gaining access to the parasite and according to the conditions found the surgeon could conduct the operation through the peritoneum or through the bladder. He could not recollect an instance of hydatid cyst in the exact situation indicated by Mr. Bird, but he had had experience of several peritoneo-vesical operations in which the method had proved very useful.

DR. A. E. ROWDEN WHITE inquired of Mr. Bird if he recollected the case of a man, aged thirty, whom he saw in consultation with Dr. Stawell several years ago. The symptoms in this instance were the expression of intra-pelvic pressure and had consisted in frequency of micturition and difficulty in defecation. The motions had been tape-like in form and pressure on the lumbo-sacral plexus had been indicated by complaint of sciatica on the part of the patient.

By digital examination *per rectum* a hard, globular swelling about the size of a cricket ball had been felt above the prostate. The man's general condition had been good.

MR. BIRD had suggested a hydatid cyst as the probable nature of the swelling and had subsequently operated. Through a suprapubic incision and working throughout extraperitoneally he had evacuated the cyst contents and had drained the cyst. The incision had healed very quickly and the patient had been completely relieved.

DR. ALLEN ROBERTSON recalled the history of a woman who had presented herself at the Women's Hospital on account of difficulty in defecation and a sense of fullness in the pelvis. He had been aware that she had undergone an operation some sixteen years previously for hydatid of the liver and that on that occasion there had

been good reason to believe that several daughter cysts had escaped into the abdomen. In the interval several operations had been performed for hydatid, so that it was extremely probable that the pelvic tumour which was evident, was also an echinococcus cyst. It had proved to be so and had been successfully drained through the vagina.

Mr. BIRD, in reply, said that the remarks of those who had participated in the discussion served to show how variable were the manifestations of hydatid disease and how difficult it was to make a statement which was generally applicable.

In those examples of pelvic hydatid with which he had had to deal he saw no reason for traversing the peritoneum. He regarded the escape of cysts through the urethra as a lead from Nature. Having found the opening into the urethra, he insinuated a finger and enlarged it to a size which permitted of the evacuation of the cyst contents. It had not been necessary to get a good view in these instances; feeling was quite sufficient.

The approach through the perineum appeared to him to place the operator under the disadvantage of being too far away and having to traverse an unnecessary distance to reach the cyst.

Mention of Mr. Russell's paper by Mr. Syme recalled to him a patient affected with an hydatid cyst, situated low in the recto-vesical space, but within the peritoneum. He had extracted the mother cyst with its contents and, having found that he had been unable to marsupialize the cyst, he had dropped it back. Ten days later a quantity of watery fluid stained with blood from the adventitia had been passed *per anum*.

As compared with extra-peritoneal pelvic hydatids the intra-peritoneal cysts were the more troublesome in that they were more prone to exert pressure on the ureter. He recollected the case of a man who had been the subject of multiple echinococcus cysts throughout the abdomen and in the pelvis. This patient had eventually died and at the autopsy it had been seen that the kidneys had been reduced to bags of pus as the result of prolonged pressure on the ureters and subsequent infection. Such a sequence of events was very unlikely to occur in the course of extra-peritoneal hydatids situated in the areolar tissue between the bladder and the rectum.

Mr. Bird concluded with an expression of thanks to the contributors to the discussion.

#### Abnormal Dentition.

DR. VAL. MACDONALD read a paper entitled "Pathological Dentition: A Clinical Entity" (see page 290).

In the discussion members of the Australian College of Dentistry Alumni Society, who had been invited to attend, took part.

DR. K. STUART CROSS said that Dr. Macdonald's illustrations of impacted teeth had reminded him of several examples that had come under his notice.

A lady, aged seventy, who had been edentulous for years, had become subject to severe left-sided facial neuralgia. After some time a swelling had developed at the angle formed by the alveolar process and the ascending ramus of the left side of the mandible. He had been asked to take a skiagram in order to elucidate the nature of the swelling, which was thought to be most probably a tumour. The skiagram had disclosed a third lower molar tooth impacted in the ascending ramus of the jaw. It was interesting to note that, although this unerupted tooth had been present for so many years, symptoms referable to it had not appeared until very late in the life of the patient.

Dr. Cross recalled a second patient for whom two or three teeth had been extracted in the upper bicuspid region on account of apical infection. Suppuration had continued, however, and radiographic examination had shown the presence of an unerupted canine tooth across which a supernumerary tooth had been lying transversely. Both unerupted teeth had been situated at some distance from the alveolar margin.

A third instance was that of a patient referred for examination a few days previously, suffering from pain in the region of the unerupted third left molar and with the provisional diagnosis of an impacted tooth. Skiagrams of the two angles of the lower jaw had shown a normally situated unerupted third molar on the left side, but with

a clearly defined infective focus in the alveolar process in relation to the distal aspect of its crown. On the right side, however, the corresponding unerupted tooth had been seen lying at an angle of 45° to the axis of the alveolar process, impacted against the adjacent second molar, but giving rise to no symptoms. A considerable time had been spent at the telephone that very morning in convincing the dentist that the impacted tooth was on the symptomless side.

DR. SYDNEY PERN drew attention to the fact that a great degree of impaction might exist and yet give rise to no symptoms. In a recent skiagram of the mouth of a boy, aged sixteen, several unerupted and impacted teeth had been disclosed, but the boy had not complained of any symptoms referable to the impaction.

DR. J. MONAHAN LEWIS said that Dr. Macdonald had discussed a subject of perennial interest and fraught with many paradoxes, such as that provided by the third case quoted by Dr. Cross.

Among the many interesting points that came up, one was that concerning the mechanism of eruption. It was commonly assumed that if a tooth in course of eruption were blocked, pressure must exist in consequence. If such pressure were developed and affected the pulp, then the infant in the dentition period had a just claim on their sympathies.

But very little was known of the actual mechanism of dentition and he was of opinion that perhaps too much had been attributed to pressure on the erupting tooth. In some of Dr. Macdonald's illustrative slides were shown unerupted teeth impinging on and cutting through the roots of neighbouring teeth, but it was to be remembered that the movement of a tooth was preceded by a bank of osteoclasts which prepared the way. Thus, although there might be some *vis a tergo*, the whole effect could scarcely be attributed to pressure.

In some remarks on the subject of irregularity in eruption, Dr. Lewis referred to the feeding experiments of Edward and May Mellanby, in which the adverse effects on dentition of an improperly balanced diet were demonstrated. If the "fat-soluble A" accessory food factor were withheld from the diet of young puppies, in addition to changes in the bony skeleton, the teeth were found to erupt irregularly and to be very fragile.

An adequate supply of the fat-soluble A accessory food factor would therefore seem to be of the first importance in promoting normal dentition.

Two disorders of infancy which had been classed as disturbances due to dentition, were diarrhoea and bronchitis, but in his opinion these infective conditions of the alimentary and respiratory tracts respectively could more properly be referred to the use of dirty comforters and the exposure of the infant to infection by being nursed by catarrhal persons.

DR. ERIC YULE said that he had observed that impaction of a tooth involving the gingival organ sometimes gave rise to greater disturbances than those arising from the impingement of one tooth on another well away from the alveolar margin. In illustration he detailed briefly the case of an ex-soldier, aged twenty-eight years, who had been granted a pension on account of nervous debility. He had been very dull and apathetic and only on infrequent occasions had become mentally alert. It had been found that he had an impacted right upper bicuspid tooth and the effect of the nerve block injection made for its removal had been very noticeable in that the patient had brightened at once. After removal of the tooth he had no longer exhibited the depression which had formerly characterized him; at present he was leading an active life as a farmer.

DR. MACDONALD, in reply to Dr. Pern's contention that impaction might exist without pain, said that he thought he had made that fact sufficiently clear when speaking of the third molars, which many people carried impacted throughout life without being conscious of their presence. Similar observations had been made with respect to other teeth.

Dr. Lewis had referred to errors in diet and had expressed doubt if pressure were ever present during eruption of the teeth. As long as the process of eruption proceeded as a physiological process, there was no tension



and therefore no back pressure. But as soon as anything upset the delicate balance, a pathological condition would be in evidence, with its resultant back pressure. Such an upset might undoubtedly be due to errors in diet or other factors leading to malnutrition. Correction of such causative error might eventually restore the normal balance, but the child might be saved much trouble by lancing. The lancing must be thorough and should consist of crucial incisions for the molars and canines and linear for the incisors. It might even be necessary to remove a circular portion of tissue over a molar or canine. Scarification was of no use.

Dr. Eric Yule had suggested that the greatest disturbance was caused by impaction near the gingival margin. As regards pressure effect, he would deny that. Some of the slides he had shown illustrated the fact that the pressure pain might be due to backward pressure on the pulp at the apex of the impacted or erupting tooth, to impingement on the peri-cemental membrane of another tooth or to actual destruction of the foot of an erupted tooth as a result of the pressure of the impacted tooth. The nearer the impacted or erupting tooth was to the surface, the greater was the likelihood of trauma of the gum and sepsis becoming the chief considerations.

#### MEDICO-POLITICAL.

A MEETING of the Western Australian Branch of the British Medical Association was held at the Perth Hospital on July 19, 1922. Dr. D. M. McWhae, C.M.G., C.B.E., the President, in the chair.

#### Lodge Agreement.

DR. J. E. F. STEWART moved:

That the existing Model Lodge Agreement is unsatisfactory and needs immediate revision, in that it requires medical officers to be on duty for twenty-four hours per day for three hundred and sixty-five days per year for a remuneration which need not necessarily exceed 24s. per year.

That the Friendly Societies' Council be immediately notified to the above effect.

The motion was seconded by Dr. A. CLARKE.

DR. E. A. OFFICER thought that the existing agreement was a fair one. It had taken twelve months to establish it. He was quite satisfied with the conditions of lodge practice under its provisions.

DR. J. K. COUCH suggested that a working agreement might be arranged among lodge surgeons whereby one surgeon could liberate his colleague during a week-end and during holidays, to enable him to get away from his practice.

DR. L. J. ROBERTSON said that the lodge agreement was working well and should not be disturbed.

DR. K. G. MCK. ABERDEEN suggested... that a charge of 2s. 6d. should be made for all visits between 8 p.m. and 7 a.m..

The motion was lost, only two members voting for it.

#### NOTICES.

THE COUNCIL OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION has arranged the following provisional programme of the Branch meetings. The Scientific Committee reserves to itself the right to modify the arrangements, but it is hoped that no changes will be necessary.

October 4, 1922.

At the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne Hospital, at 8.15 p.m.

DR. H. DOUGLAS STEPHENS: "Clinical Symptoms of Enlargement of the Spleen in Children."

DR. S. O. COWEN: "Famillal Splenomegaly."

DR. K. HILLER will open the discussion.

A MEETING of the Section of Pædiatrics of the New South Wales Branch of the British Medical Association will be held in the B.M.A. Building, 30-34, Elizabeth Street, Sydney,

on September 14, 1922, at 8 p.m.. An address will be delivered by DR. TRUBY KING, of New Zealand. All members of the New South Wales Branch of the British Medical Association are invited to attend.

#### NOMINATIONS AND ELECTIONS.

THE undermentioned have been elected as members of the Victorian Branch of the British Medical Association:

BROINOWSKI, GRACIUS HERBERT, M.B., 1892 (Univ. Sydney), Hamilton.

WOOD, BERTHA, M.B., B.S., 1921 (Univ. Melbourne), Hospital for the Insane, Mont Park.

#### TRANSMISSION OF PATHOLOGICAL SPECIMENS FOR EXAMINATION.

THE DEPUTY-POSTMASTER-GENERAL IN NEW SOUTH WALES informs us that recently a parcel containing a sample of urine to be examined at the Board of Health was received from the country in a leaking condition. The parcel contained in addition a letter of advice. We have called the attention of medical practitioners to the regulations of the Post Office regarding parcels containing specimens for examination (see THE MEDICAL JOURNAL OF AUSTRALIA, October 16, 1920, page 389; November 27, 1920, page 506; April 16, 1921, page 314). Letters of advice should not be placed in the packages unless the full postage at letter rate is paid on the parcel. For the information of those using the post for the transmission of specimens we again reproduce the regulation as printed in the *Post and Telegraph Guide*:

Regulation 37.—Any person who sends by post bacteriological or pathological specimens, otherwise than in accordance with the conditions governing the transmission of those articles, shall be guilty of an offence against these regulations and shall be liable, on conviction, to a penalty not exceeding £50.

Rule 41.—(1) Bacteriological or pathological specimens addressed to laboratories registered by the Postmaster-General may be accepted for transmission as samples under the following conditions, viz.:

(a) On the outside of every such article there must be written or printed the words "Specimen for Bacteriological or Pathological Examination."

(b) The liquid or substance forwarded for examination must be enclosed in a receptacle hermetically sealed, which receptacle must itself be placed in a strong wooden or metal case in such a way that it cannot shift about and with a sufficient quantity of some absorbent material (such as sawdust or cotton wool) so packed about the receptacle as absolutely to prevent any possible leakage from the package in the event of damage to the receptacle.

(c) Except as provided in sub-paragraph (d), the article must be registered and not dropped into a letter-box, nor be sent by parcel post. Any article of the kind found in the parcel post, or any article of the kind, whether registered or not, found in the post, not packed as directed, shall be deemed to be posted in contravention of the *Post and Telegraph Act* and dealt with accordingly.

(d) In cases where specimens (throat swabs) are not obtained in time to permit the sender to pack them and hand the article in at a post office for registration, on account of the post office having closed for the day, such specimens may be transmitted by ordinary post, provided they are properly packed in accordance with sub-paragraph (b) and the article bears an indorsement by the sender that the specimen enclosed was obtained too late to permit the sender to hand the article in at a post office for registration.

(2) An article containing any bacteriological or pathological specimens shall not be accepted for transmission or, if found in the post, shall not be delivered unless addressed to a laboratory which has been registered by the Postmaster-General.

(3) Applications for registration by the Postmaster-General of laboratories to which bacteriological or pathological specimens may be sent for examination must be made on the proper form, copies of which may be obtained from the Deputy-Postmaster-General of a State.

## Books Received.

- A TEXT-BOOK ON GONORRHEA AND ITS COMPLICATIONS, by Dr. Georges Luys; translated and edited by Arthur Foerster, Captain, R.A.M.C. (T.C.). M.R.C.S., L.R.C.P. (Lond.); Third Revised Edition: 1922. London: Baillière, Tindall & Cox; Royal 8vo., pp. xvi. + 400, with 212 illustrations and five coloured plates. Price: 21s. net.
- ATLAS OF SYPHILIS, by Professor Leo von Zumbusch, Munich; 1922. London: John Bale, Sons & Danielsson, Limited; Demy 4to., with sixty-three illustrations taken direct from Nature by colour photography on heavy art paper and one single colour illustration. Price: 30s. net.
- DE ARTE PHYSICALI ET DE CIRURGIA OF MASTER JOHN ARDERNE, SURGEON OF NEWARK, DATED 1412. Translated by Sir D'Arcy Power, K.B.E., M.B. (Oxon.), F.R.C.S., from a transcript made by Eric Millar, M.A. (Oxon.), from the Replica of the Stockholm Manuscript in the Wellcome Historical Medical Museum; 1922. London: John Bale, Sons & Danielsson, Limited, Crown 4to., pp. 60, with coloured frontispiece and thirteen plates. Price: 10s. 6d. net.
- INFANT MORTALITY, by Hugh T. Ashby, B.A., M.D., B.C. (Camb.), M.R.C.P. (London); Second Edition; 1922. Cambridge: At the University Press; Demy 8vo., pp. 224, with nine illustrations. Price: 15s. net.
- THE DISCOVERY OF THE CIRCULATION OF THE BLOOD, by Charles Singer, M.D., D.Litt., F.R.C.P.; 1922. London: G. Bell & Sons, Limited; Crown 8vo., limp cover, pp. 80, with eight plates. Price: 1s. 6d. net.
- THE HUMAN INSTINCTS IN BUSINESS, by A. B. Fitt, M.A. (N.Z.), Ph.D. (Leipzig); 1922. Melbourne and Sydney: The Lothian Book Publishing Company, Limited; Crown 8vo., limp cover, pp. 99. Price: 3s. 6d. net.

## Medical Appointments.

THE COMMONWEALTH GOVERNMENT has appointed, for the purposes of the *Navigation Act, 1912-1920*, the undermentioned officers of the Department of Health as Inspectors of Shipping and as Inspectors of Seamen: Dr. A. RICHARDSON (B.M.A.) and Dr. C. R. WIBURD (B.M.A.).

DR. D. McD. STEELE (B.M.A.) has been appointed Honorary Medical Officer at Port Lincoln Hospital, South Australia.

DR. L. A. HAYWARD (B.M.A.) has been appointed Medical Officer at the Barmera Hospital, South Australia.

THE HONOURABLE DR. A. J. H. SAW, M.L.C. (B.M.A.), has been re-appointed as a Trustee of the Public Education Endowment in Western Australia.

DR. C. G. GODFREY (B.M.A.) has been appointed Inspector of Inebriate Institutions in Victoria during the absence on sick leave of Dr. W. ERNEST JONES (B.M.A.).

DR. WILLIAM MOORE (B.M.A.) has been appointed a Member of the Medical Board of Victoria.

DR. ROBERT SCOTT (B.M.A.) has been appointed Returning officer for the Electoral District of Ballarat West, Victoria.

APPROVAL has been gazetted of the appointment from July 1, 1922, of DR. ROBERT DICK (B.M.A.), Acting Senior Medical Officer of Health, Office of the Director-General of Public Health of New South Wales, as Senior Medical Officer of Health in that Department.

## Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xviii.

TERRITORY OF NEW GUINEA: Vacancies for Medical Officers.

## Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429, Strand, London, W.C.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney	Australian Natives' Association Ashfield and District Friendly Societies' Dispensary Balmalm United Friendly Societies' Dispensary Friendly Societies Lodges at Casino Leichhardt and Petersham Dispensary Manchester Unity Oddfellows' Medical Institute, Elizabeth Street, Sydney Marrickville United Friendly Societies' Dispensary North Sydney United Friendly Societies People's Prudential Benefit Society Phoenix Mutual Provident Society
VICTORIA: Honorary Secretary, Medical Society Hall, East Melbourne	All Institutes or Medical Dispensaries Australian Prudential Association Proprietary, Limited Manchester Unity Independent Order of Oddfellows Mutual National Provident Club National Provident Association
QUEENSLAND: Honorary Secretary, B. M. A. Building, Adelaide Street, Brisbane	Brisbane United Friendly Society Institute Hampton District Hospital, Kurildala, North Queensland Stannary Hills Hospital
SOUTH AUSTRALIA: Honorary Secretary, 12, North Terrace, Adelaide	Contract Practice Appointments at Renmark Contract Practice Appointments in South Australia
WESTERN AUSTRALIA: Honorary Secretary, Saint George's Terrace, Perth	All Contract Practice Appointments in Western Australia
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington	Friendly Society Lodges, Wellington, New Zealand

## Diary for the Month.

- SEPT. 9.—Eastern District Medical Association, New South Wales.  
SEPT. 12.—New South Wales Branch, B.M.A.: Ethics Committee.  
SEPT. 13.—Western Australian Branch, B.M.A.: Council.  
SEPT. 13.—Melbourne Paediatric Society.  
SEPT. 14.—Victorian Branch, B.M.A.: Council Meeting.  
SEPT. 15.—Central Southern Medical Association (Goulburn), New South Wales.  
SEPT. 15.—Eastern Suburbs Medical Association, New South Wales.  
SEPT. 19.—New South Wales Branch, B.M.A.: Executive and Finance Committee.  
SEPT. 20.—Western Australian Branch, B.M.A.: Branch.  
SEPT. 20.—South Sydney Medical Association, New South Wales.  
SEPT. 22.—Queensland Branch, B.M.A.: Council.  
SEPT. 26.—New South Wales Branch, B.M.A.: Medical Politics Committee; Organization and Science Committee.  
SEPT. 27.—Victorian Branch, B.M.A.: Council Meeting.  
SEPT. 28.—South Australian Branch, B.M.A.: Branch.  
SEPT. 28.—Brisbane Hospital for Sick Children: Clinical Meeting.

## Editorial Notices.

MANUSCRIPTS forwarded the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

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